JOURNAL
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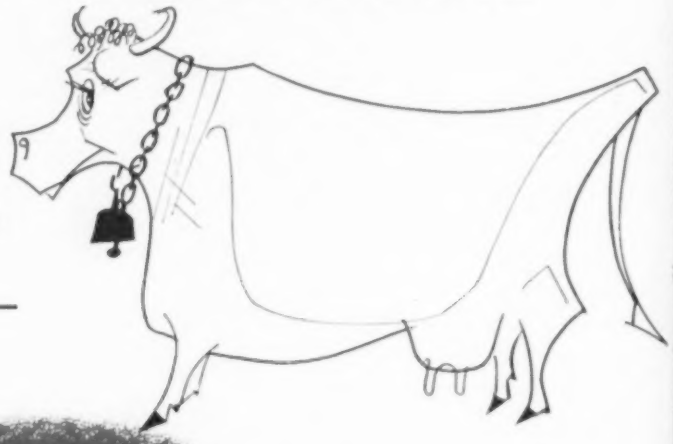

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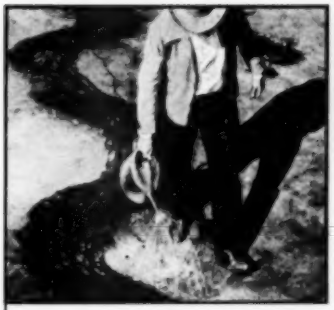

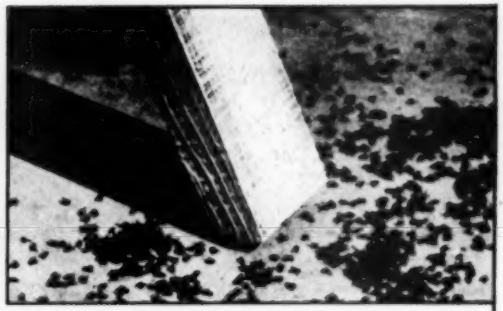

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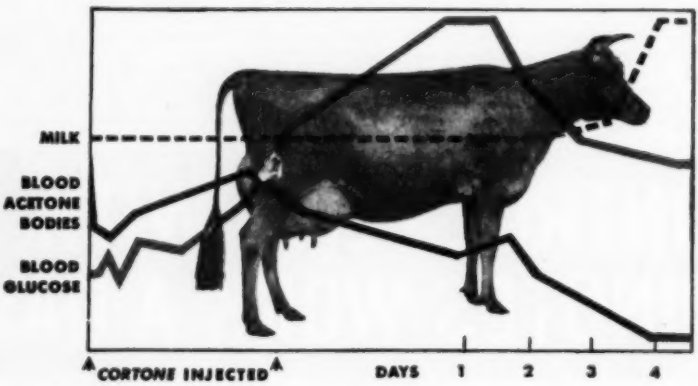

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AVMA ☆ Report

Veterinary Medical Activities

✦ Officers, Executive Board members, and several central office staff members spent part or all of the week preceding the 1953 annual meeting in Toronto engaged in preconvention sessions and in final preparations for the convention.

★ ★ ★ ★

✦ The Association will have several representatives at the Fifteenth International Veterinary Congress in Stockholm, August 9-15: Dr. J. G. Hardenbergh, executive secretary; Dr. W. A. Hagan, U. S. member of the Permanent Committee of the Congress; Dr. S. F. Scheidy, Executive Board member from District II; in addition, a number of other AVMA members will attend and take part in the program.

★ ★ ★ ★

✦ President-Elect J. A. McCallam represented the AVMA at the quarterly meeting of the Board of Directors of the National Health Council held in New York City on June 19.

★ ★ ★ ★

✦ Assistant Executive Secretary C. D. Van Houweling spoke at the annual meeting of the Michigan State Veterinary Medical Association in Grand Rapids on July 1, 1953. He discussed the new doctor draft law and the responsibility each veterinarian has to maintain good public relations.

★ ★ ★ ★

✦ The doctor draft law was signed by President Eisenhower on June 29. For details *see* p. 151.

★ ★ ★ ★

✦ Dr. S. F. Scheidy, Executive Board member from District II, has been invited to present one of the principal papers at the annual congress of the British Veterinary Association which will meet in Aberdeen, Scotland, September 6-12. Dr. Scheidy will speak on some of the modern developments in chemotherapeutics and antibiotic therapy. He has also been designated to represent the AVMA at the B.V.A. meeting. Dr. Scheidy will also take part in the program of the Fifteenth International Veterinary Congress in Stockholm, August 9-15.

★ ★ ★ ★

✦ Assistant Executive Secretary C. D. Van Houweling spoke to the veterinary medical students attending ROTC summer camp at Fort Sam Houston on June 23, while inspecting the convention facilities of San Antonio, Texas.

★ ★ ★ ★

✦ Assistant Executive Secretary C. D. Van Houweling has been assisting Mr. Wm. T. McGlothlin of the Southern Regional Education Board in regard to a survey to be made of the needs for veterinary medical education in the South. Dr. H. J. Stafseth of Michigan State College will direct the study.

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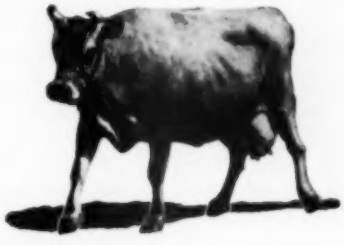

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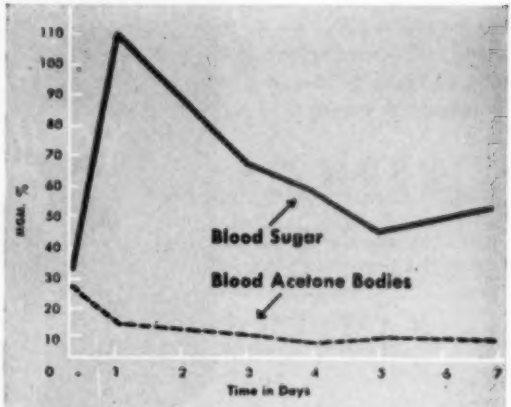

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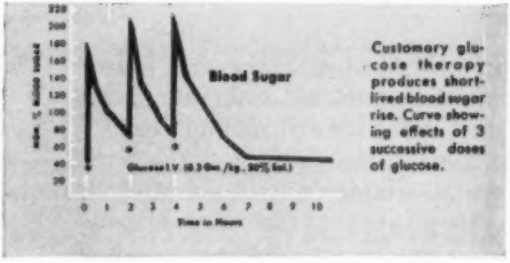

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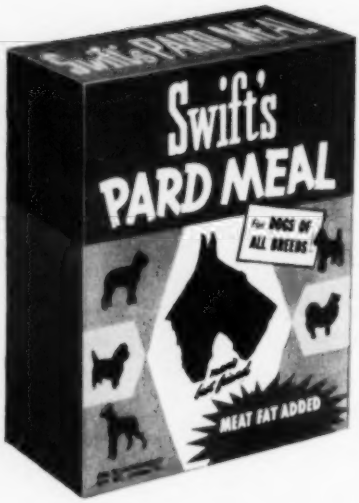

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1. Scott, M. L. Notes on a Successful Effort to Treat Horses Which Bleed, The Blood Horse, LXIV:1008 (Nov.) 1952.
2. Blamey, E. R. Coagulation in Seeping Hemorrhage—Evaluation of Koagamin, J. Am. Vet. M. A. 119:291, 1951.
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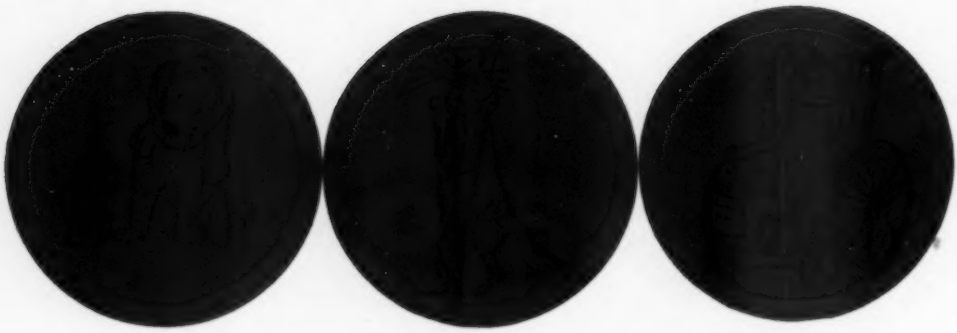

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Toxoplasmosis. V. Isolation of Toxoplasma from Cattle

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Columbus, Ohio

A SURVEY on the incidence of toxoplasmosis in small animals was initiated in 1950 and expanded to include farm animals in 1951 when the disease was discovered in swine.[1] Late in 1952, a portion of the results of this survey was summarized in a report describing congenital toxoplasmosis in a calf and two litters of pigs, as well as the isolation of Toxoplasma from the milk of a cow and 2 sows.[2] More recently, experimental work has confirmed the fact that intrauterine transmission of Toxoplasma from the dam to her unborn fetuses occurs in domestic animals. Bitches with toxoplasmosis gave birth prematurely to infected pups and the dam's milk contained Toxoplasma.[3]

It is the purpose of this report to describe the clinical features and the demonstration of Toxoplasma in cattle from four widely separated herds in Ohio. Some adult cattle died but, like toxoplasmosis in dogs[3] and swine,[2] greater losses occurred in young animals.

DESCRIPTION OF TOXOPLASMA FROM CATTLE

Using the animal transfer technique previously described,[1,2] Toxoplasma were recovered from mice inoculated intraperitoneally with tissues and milk from cattle. Because of the difficulties experienced in adapting Toxoplasma of bovine origin to mice (in preliminary studies), as many as 200 healthy white Swiss mice were inoculated with body fluids and tissue emulsions collected from suspected cases of toxoplasmosis.

Morphologically, in Wright's stained smears of mouse peritoneal exudate, Toxoplasma isolated from cattle where identical to organisms of human, canine, and porcine origin and may be satisfactorily designated as *Toxoplasma gondii*. The organisms measured 1.8 to 2.2 μ wide by 3.5 to 5.7 μ long. They were lunate, ovoid, or pyriform in shape. The cytoplasm contained basophilic granules of uneven sizes separated by unstained cytoplasm. One pole of the crescentic organism was pointed, while the opposite pole was blunt or rounded. A magenta-colored chromatin body was located centrally or toward the rounded end.

Histologically, round, oval, or falciform bodies were seen extracellularly; some occurred intracellularly as "pseudocysts" in the lesions. The round or oval forms were totally basophilic with a less dense central portion; some forms contained an eccentric, oval, dense chromatin mass surrounded by lightly acidophilic cytoplasm. The round form measured 1.8 to 2.2 μ in diameter. As many as 10 of these organisms were seen within monocytes, reticuloendothelial cells, glial cells, and epithelium. Seen less frequently were crescentic forms, sometimes paired, which measured 1.4 to 1.8 μ

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wide by 2.2 to 3.6 μ long. (Space will not permit inclusion of the complete histopathological study in this report.)

HERD 1

A herd of 70 Hereford and 2 Jersey cows were confined to the same barns and adjacent fields where a toxoplasmosis epizoötic occurred in swine.[1] On Jan. 12, 1952, toxoplasmin was injected intradermally into the caudal fold and mucocutaneous junction at the edge of the vulva, using 0.1 ml. at each test site. Toxoplasmin was prepared at this laboratory from a cell-free filtrate of *T. gondii* isolated from dogs with spontaneous toxoplasmosis.[2] On January 14, 3 of the 15 cows tested were found to have edema, induration, and hyperemia at the test sites, varying from 6 mm. to 35 mm. in diameter. The response was similar to toxoplasmin reactions in dogs,[4] swine, and cattle.[2] No visible illness was observed in the 3 toxoplasmin-sensitive cows.

A 4-year-old Hereford cow which elicited the largest toxoplasmin reaction was hauled by truck to our laboratory and placed in a clean, concrete isolation building. Cattle had not been housed in this building since its construction. The cow was found to be in the seventh month of gestation, fair physical condition, and in a good state of health. Regular observations were made for three months, during which time no visible clinical signs were observed. Although three complete blood counts were made, no significant hematological deviations were noted. She elicited a strong reaction on Jan. 29, 1952, when the intradermal toxoplasmosis test was applied. On March 25, she gave birth to a male calf which was immediately taken to the laboratory and killed (to be described later).

No abnormalities were seen in the placenta, placental fluids, or uterine caruncles collected at the time of parturition for animal inoculation. A mild mastitis of seven days' duration was present in the cow's left front quarter. Colostrum was collected aseptically from each quarter and injected intraperitoneally into 8 healthy white Swiss mice. One of the mice became ill and Wright's stained smears of peritoneal exudate revealed Toxoplasma organisms. This mouse had received colostrum from the right front quarter. No microörganisms were cultured and no Toxoplasma were recovered from the mastitis quarter. Four healthy mice were inoculated with organ emulsions from the infected mouse. Again, Toxoplasma were recovered and transferred successfully up to the fourth passage. No organisms were isolated from the placenta, placental fluids, or uterine caruncles.

No visible illness was apparent in the cow during the postparturient observation period of fourteen days at which time she was killed and necropsied. No gross lesions were seen at necropsy; representative tissues from most organs were collected for animal inoculation and histopathological study. No organisms were recovered from the heart, brain, liver, kidney, spleen, ovary, lymph nodes, adrenals, or skeletal muscle. Microscopic lesions were as follows: focal metritis, chronic pneumonia, focal and perivascular myocarditis, and necrotic foci in the liver. Round or oval basophilic bodies, considered to be Toxoplasma, were seen in the uterine wall, spleen, and lung.

The male Hereford calf, taken from its dam (described above) for euthanasia and necropsy, revealed no clinical signs or gross lesions. Brain, heart, lung, liver, spleen, mesenteric node, and kidney tissues were collected at necropsy for culture, histopathological study, and mouse inoculation. One of the mice died nine days after inoculation and its heart, liver, spleen, lung, and brain were emulsified and inoculated into 15 healthy mice. Toxoplasma were recovered from 1 of the second-passage mice. Although all tissues collected from the calf were studied histologically, Toxoplasma were demonstrated only in lesions of the liver.

On March 22, 1952, a 5-year-old Hereford cow developed central nervous disturbances and died after three days. No gross lesions were found at autopsy.

During March and April, 1952, 31 calves were born in this herd: 3 were dead at the time of birth; 2 were born alive but developed obscure illness, mild scours, and died within three days; and 2 sickened but recovered after two weeks. No evidence of brucellosis or other infection was found.

A 4-year-old Hereford cow which had given birth to an apparently healthy calf on February 23 suddenly became ill on April 24. This cow developed extreme excitability, ataxia, champing of the jaws, and foaming at the mouth. Near the end

of the first day, she went down but continued to move her legs in a bicycling manner and died after four days.

On April 25, a 3½-year-old Hereford cow was thought to have rabies because of her extremely excitable temperament. Champing of the jaws and ataxia developed and finally she became prostrate. Running movements were continued until death four days later. Organisms not unlike those seen in previous cases of toxoplasmosis were demonstrated histologically in tissues collected at autopsy. No Negri bodies or elementary bodies of sporadic bovine encephalomyelitis were seen upon microscopic examination of the brain. Neither rabies nor toxoplasmosis developed in mice inoculated with brain tissue and cerebrospinal fluid.

HERD 2

Fifty-seven per cent of the calves born in a herd of 90 Brown Swiss cows were lost between June, 1951, and May, 1952. There were no abortions and the dams were unaffected but of the 78 calves, all alive at birth, 45 died between the ages of 1 day to 6 months. The majority developed dyspnea, rapid respiration, coughing, sneezing, nasal discharge, frothing at the mouth, trembling and shaking of the head, and dehydration. Body temperatures as high as 106 F. were recorded; however, many were normal or subnormal. Finally, weakness, grinding of the teeth, and prostration developed and death usually occurred after a course of two to six days. Some died suddenly without manifesting clinical signs, while in others the course was as long as six months. Diarrhea was not a constant finding, but when present the feces contained mucus and blood. An occasional calf died after showing only extreme depression; others gradually recovered. Therapeutic measures including blood transfusions, penicillin, terramycin, and sulfonamides were of no value. Some calves were removed from their dams and placed on nurse cows; this procedure failed to alter the course of the disease.

A 4-week-old Brown Swiss calf, which had been sick for two days, was destroyed for the purpose of collecting fresh tissues for mycological and bacteriological culture, histopathology, and animal inoculation. The clinical signs observed in this calf were violent trembling or shivering, shaking and tremors of the head, temperature of 101 F., respirations 136 per minute, coughing, sunken eyes, and pale mucous membranes. There was also sensitivity to abdominal palpation, soreness of the leg joints, and excessive fluid in the carpal joints. Agglutination tests for brucellosis were negative. The necropsy findings included fibrinous deposits on the peritoneum, enlarged and hemorrhagic submaxillary lymph nodes, swollen and edematous bronchial lymph nodes, mucofibrinous masses and transudate in the trachea and bronchi, myocardial hemorrhage, and pneumonia. The pericardial sac contained 15 ml. of clear fluid. The brain was hyperemic and the cerebrospinal fluid was cloudy and pink.

Brain, heart, liver, lung, spleen, kidney, blood, pericardial fluid, and cerebrospinal fluid were collected aseptically for animal transfer studies. Toxoplasma were recovered from mice inoculated with the lung suspension. This organism was passed in a second group of mice and was again recovered. Histologically, Toxoplasma were demonstrated in lesions of the brain, lung, and bronchial lymph node of this calf.

There was no evidence of sporadic bovine encephalomyelitis since neither microscopic lesions nor elementary bodies (using Machiavello's stain) characteristic of this disease were seen.

HERD 3

In January, 1952, a 1-year-old Hereford bull from a herd of 45 animals developed an illness characterized by anorexia, weakness, ataxia, inability to stand, prostration, chewing movements, and bicycling. Treatment with antibiotics and blood transfusions failed to alter the course of the disease and the bull died one week after onset of illness. Further investigation on this farm was not possible since the herd was dispersed. Microscopic examination of the cerebrum revealed perivascular edema, subpial calcification, and hemorrhages. Microglial granulomas (with necrosis, plasma cells, monocytes, and a few neutrophils) in brain sections contained both free and intracellular Toxoplasma.

HERD 4

A 7-year-old cow from a herd of 25 Jerseys sickened two weeks after parturition.

The prominent clinical signs were anorexia, low milk production, diarrhea, depression, temperature of 103.6 F., and mastitis in two quarters. Two hemograms showed mild anemia, leukopenia, and a shift to the left. The clinical diagnosis was mastitis, with probable traumatic gastritis and ketosis. She failed to respond to laxatives, intravenous dextrose, and antibiotic therapy; death occurred after twenty-five days. No evidence of traumatic gastritis was found at autopsy and bacteriological cultures were negative.

Toxoplasma were demonstrated microscopically in the lungs, myocardium, pericardium, kidney, gastric lymph node, and stomach. Since the demonstration of Toxoplasma in this cow, a second cow and 7 calves in the herd died of an undiagnosed disease; 4 calves recovered from an acute illness but remained stunted until 1 year of age, and 3 calves, weak at birth, died shortly thereafter. No abortions or stillbirths have occurred in this Brucella-negative herd.

PATHOGENICITY OF TOXOPLASMA FOR CATTLE

An attempt was made to determine if Toxoplasma alone could cause a portion or all of the disease syndrome described in the above herds. Two healthy 2-year-old heifers, which were insensitive to toxoplasmin and whose serums contained no demonstrable Toxoplasma antibodies, were inoculated by various routes simultaneously with mouse tissues and fluids containing Toxoplasma. In twenty-four hours, both heifers showed an elevation of body temperature and partial anorexia for two days. Focal necrotizing and granulomatous lesions containing Toxoplasma were demonstrated histologically, thus, providing evidence that the organism had invaded the bovine tissues.

Four healthy calves between 4 and 90 days of age, whose serums contained no demonstrable Toxoplasma antibodies, were likewise inoculated with Toxoplasma, and 2 control calves received a Seitz filtrate of the same inoculum. In twenty-four hours, the experimental infection in calves was characterized by elevation of body temperature to a maximum of 107 F., generalized trembling, increased pulse and respiratory rate, extreme depression, grinding the teeth, dehydration, dyspnea, moist râles, nasal discharge, anorexia, and weakness. Shaking and tremors of the head, ataxia, and placing of the head to the side and back over the withers was manifested by 1 calf. Two calves died after a course of nine days; 2 recovered after a clinical course of two and eight days, respectively, but then were autopsied. Toxoplasma were isolated from 2 of the 4 calves by mouse inoculation of tissues collected at necropsy. Organisms identical to those seen in the spontaneous cases were demonstrated histologically in lung, brain, liver, and spleen lesions of 3 of the 4 calves. No evidence of disease was observed in the 2 control calves which received a Seitz filtrate of the Toxoplasma-containing suspension.

It would appear from these experiments that a respiratory and central nervous disease, similar in many respects to the spontaneous disease described in four herds, can be produced by Toxoplasma.

It is generally believed that Toxoplasma-infected animals may serve as a reservoir for human toxoplasmosis. We have recently described concurrent human and canine toxoplasmosis in the same households.[4] Serums from 9 of 37 people having had household contact with Toxoplasma-infected dogs possessed Toxoplasma antibodies. One woman and a 3-year-old boy had toxoplasmic chorioretinitis and encephalitis, and Toxoplasma parasitemia was found in a third person.[5]

DISCUSSION AND SUMMARY

Toxoplasma, a protozoon heretofore not known to occur in cattle, was demonstrated in 3 cows, 1 bull, and 2 calves originating in four widely separated Ohio herds. Toxoplasma were recovered from 2 of these spontaneously infected calves and 1 cow by the mouse transfer technique and were demonstrated histologically in lesions of all 6 animals. One of the above cows reacted (35 mm. edema and induration) to the intradermal toxoplasmin test, and at the time of parturition Toxoplasma were isolated from her colostrum. Histologically, organisms were demonstrated in uterine, splenic, and pulmonary lesions.

Morphologically, Toxoplasma of bovine origin were similar to organisms of human, canine, and porcine origin.

The isolation of Toxoplasma from organ emulsions, as well as the presence of or-

ganisms, histologically, in liver lesions of a calf at the time of birth, indicates that the infection was acquired *in utero*. Colostrum from the dam of this calf contained Toxoplasma organisms.

Clinical signs observed in spontaneously infected calves were dyspnea, cough, fever, tremors and shaking of the head, extreme weakness, depression, grinding of the teeth, bicycling motions, prostration, and death after a course of two to six days. In adults, extreme excitability in the early stages was observed more frequently than depression; otherwise, the signs were similar to those seen in the calves. Two experimentally infected heifers showed fever and partial anorexia for two days. Induced toxoplasmosis in 4 calves was characterized by fever, generalized trembling, extreme depression, grinding the teeth, dyspnea, nasal discharge, anorexia, weakness, shaking and tremors of the head, and ataxia. Two of these calves died after nine days, while 2 recovered after two and eight days, respectively. Toxoplasma were isolated by mouse inoculation from 2 calves and organisms were demonstrated histologically in the lung, brain, liver, and spleen lesions of 3 of the 4 experimental calves. No evidence of disease was produced in 2 control calves which received a Seitz filtrate of the Toxoplasma-containing suspension. A respiratory and central nervous disease, similar in many respects to the spontaneous disease in four herds, was experimentally produced with Toxoplasma.

Bovine toxoplasmosis can conceivably be of public health significance since Toxoplasma were demonstrated in the milk as well as edible portions of the beef carcass. In addition to milk, feces and sputum may be potential sources of infection for man and animals since Toxoplasma were found in pulmonary and gastrointestinal lesions.

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Anthrax in Great Britain in 1952

In 1952, there were 1,215 outbreaks of anthrax in Great Britain, the highest number since 1910. There were 729 outbreaks in cattle, 479 in pigs; 4 dogs, 1 sheep, 1 horse, and 1 deer were also affected. Listed as possible origins of the outbreaks were artificial feedstuffs, 1,001; fertilizers, 80; infected premises, 21; eating an infective carcass, 1; miscellaneous or unknown, 112. In 1946, only 95 cases of anthrax were recorded. The highest since 1910 was in 1938, with 833 outbreaks of which 45 were in swine.

Large quantities of bones are imported for making glue, charcoal, fertilizer, etc. They must carry anthrax spores because, in the past two years, ten persons handling these bones at one factory developed anthrax, as did two persons handling only the bags in which the bones were imported. Anthrax is not sufficiently prevalent, except in a few areas, to warrant the wholesale vaccination of animals. None of the affected animals had been vaccinated. In the past twenty years, 479 human cases of anthrax, with 46 deaths, were reported among British factory workers. Of these, 236 were handling hides and skins and 115 handling wool. Penicillin with serum is reported to have given good results therapeutically.—*Vet. Rec., April 25, 1953.*

Antibiotics for Fungi.—Waksman *et al.* report that a comparative study was made of the antifungal properties of various antibiotics. These comprised two groups: (1) those which are active against bacteria and Actinomyces organisms as well as fungi and (2) those which are active against fungi but not against bacteria and Actinomyces species. Twenty per cent of the cultures studied had a marked effect on fungi. Some are active against yeast fungi, others against filamentous fungi.—*Vet. Bull., May, 1953.*

Veterinarians from Scandinavia and Germany Who Have Visited the United States Since 1945

During the past few years many colleagues from Scandinavia and Germany have visited the United States. These visits, affording many opportunities for the interchange of ideas, have contributed materially to a better understanding and appreciation of the problems confronting the veterinary profession throughout the world. It has not been possible to contact every veterinarian from Scandinavia and Germany who has visited the United States since 1945. However, the following group will illustrate well the wide variety of professional interests of our Scandinavian and German colleagues.

Denmark

H. C. Bendixen, a graduate of the Royal Veterinary College, Copenhagen (1921), is professor of Special Pathology and Therapeutics and director of the Large Animal Medical Clinic, Royal Veterinary College, Copenhagen. His special fields of interest are nutrition and infectious diseases of swine and cattle; methods of control. He visited the Bureaus of Animal and Dairy Industry, Washington, D. C., and Beltsville, Md.; University of Pennsylvania, Merck & Company, Cornell University, Michigan State College, Purdue University, University of Illinois, University of Wisconsin, University of Minnesota, University of California. Professor Bendixen has had several tours of study in many European countries and previously visited the United States in 1939. He was on leave in 1951-1952 while engaged in veterinary work by the United Nations Food and Agriculture Organization.

Erik Blom, a graduate of the Royal Veterinary College, Copenhagen (1940), is research officer in the Danish State Veterinary Diagnostic (Serum) Laboratory engaged in brucellosis control. His special fields of interest are brucellosis control and eradication, artificial insemination, and sterility in cattle. He visited Cornell University, University of Illinois, University of Wisconsin, University of Minnesota, Wyoming Hereford Ranch, Bureau of Animal Industry at Beltsville, Md. Dr. Blom was engaged for one year (1951-1952) by the F.A.O. of the United Nations to advise the government of Luxembourg in establishing an organization for artificial insemination and sterility in cattle.

Ole Roemer, a graduate of the Royal Veterinary College, Copenhagen (1934), is head of the Mastitis Department, Danish Veterinary Diagnostic (Serum) Laboratory, Copenhagen. His special field of interest is mastitis control. He visited the University of Connecticut, University of Pennsylvania, Ohio State University, Cornell University, and the U. S. Bureau of Animal Industry, Washington, D. C. Doctor Roemer has had two study tours (1940 and 1947) in Great Britain.

Aage Jepsen, a graduate of the Royal Veterinary College, Copenhagen (1932), is professor and head of the Department of Bacteriology and Veterinary Hygiene, Royal Veterinary College, Copenhagen. His special fields of interest are bacteriology and meat and milk hygiene. He visited during his two tours, in 1947 and 1950, cold storage and freezing plants,

abattoirs, canning factories and dairy plants in New York, New Jersey, Massachusetts, Chicago, Seattle, San Francisco, Los Angeles, and Denver; the U. S. Bureau of Animal Industry, Washington, D. C., and Beltsville, Md.; Cornell University, Michigan State College, University of Wisconsin, University of Minnesota, Washington State College, University of California, Colorado A. & M. College, University of Kentucky, the Army Veterinary School at Washington, D. C., University of Connecticut, Ohio State University, Iowa State College. Professor Jepsen is the author of a textbook on veterinary milk control.

Seth Jorgensen, a graduate of the Royal Veterinary College, Copenhagen (1934), is state (royal) veterinary inspector for Milk Control in Jutland. His special fields of interest are sanitary milk production and control of milk-borne diseases. He visited the Dairy Division, United States Department of Agriculture, Washington, D. C.; University of Connecticut, Cornell University, and the University of Minnesota. Doctor Jorgensen has published several scientific papers on the control of milk-borne diseases. He has done considerable research work on the ring test of milk for brucellosis.

Axel Thomsen, a graduate of the Royal Veterinary College, Copenhagen (1909), is head of the Department and chief of the Department of Brucellosis, Danish Veterinary Diagnostic (Serum) Laboratory, Copenhagen. His special field of interest is brucellosis in domestic animals. He visited during two tours (1947 and 1950) the University of Pennsylvania, Cornell University, Bureau of Animal Industry at Beltsville, Md., the Bureau of Animal Industry Laboratory at Harrisburg, Pa.; he attended the Third Inter-American Congress on Brucellosis in Washington, D. C., and meetings of the Joint F. A. O. and W. H. O. expert panel on brucellosis. Doctor Thomsen is leader of W. H. O.'s Brucellosis Center in Denmark. He has published many scientific papers on brucellosis in cattle, swine, and man, and on occupational diseases of veterinarians.

H. C. Momberg-Jorgensen, a graduate of the Royal Veterinary College, Copenhagen (1930), is director of Experimental Studies, Government Diagnostic (Serum) Laboratory, Copenhagen. His special field of interest is diseases of furbearing animals. He visited Cornell University, Fromm Laboratories, Ontario Veterinary College; U. S. Bureau of Animal Industry, Beltsville, Md.; United States Furbearing Animal Experiment Station, Saratoga Springs, N. Y.

Hans E. Ottosen, a graduate of the Royal Veterinary College, Copenhagen, is with the Danish Veterinary Diagnostic (Serum) Laboratory in Copenhagen. His special field of interest is the etiology and control of diseases of newborn calves. He visited the U. S. Bureau of Animal Industry, Washington, D. C., and Beltsville, Md.; the University of Maryland, University of Wisconsin, and the University of Minnesota.

Svend H. Thorbjornsen, a graduate of the Royal Veterinary College, Copenhagen, is state (royal) veterinary inspector for Meat Control in Jutland, Denmark. His special fields of interest are federal, state, and local meat hygiene, food processing, and sanitary control. He visited the Bureau of Animal Industry in Washington, D. C., and Beltsville, Md.; poultry slaughtering plants in Virginia, Cornell University; Municipal Meat Inspection, Detroit, Mich.; abattoirs in Chicago, St. Paul, and Madison; the

health department of Chicago, the University of Wisconsin, University of Minnesota, Iowa State College.

Germany

Kurt Wagener, a graduate of the Hannover Veterinary College, Hannover, Germany (1922), is director, Department of Microbiology and Hygiene at his alma mater. His special field of interest is infectious diseases of animals. He visited Cornell University, the Bureau of Animal Industry at Washington, D. C., and Beltsville, Md. Doctor Wagener spent one year (1930-1931) studying as a fellow of the Rockefeller Foundation in the Bureau of Animal Industry, Washington, D. C. He is interested in hyperkeratosis.

Norway

Michael Braend, assistant in the Clinic for Special Pathology and Therapeutics, Norwegian Veterinary College, Oslo. His special field of interest is artificial insemination in cattle and sheep. He visited the University of Wisconsin (for several months), University of Minnesota, Iowa State College, University of Illinois, Ohio State University, Purdue University, U. S. Bureau of Animal Industry at Beltsville, Md., University of Connecticut, and Cornell University.

Olav A. Berg, a graduate of the Royal Veterinary College, Copenhagen (1939), is associate professor of Internal Pathology and Therapeutics in the Small Animal Clinic, Norwegian Veterinary College, Oslo. His special fields of interest are diseases of small animals. He visited the University of Pennsylvania, Cornell University, Michigan State College, Iowa State College, University of Wisconsin, the Mayo Foundation, Angell Memorial Animal Hospital, and several small animal hospitals.

Reidulf Rochmann, a graduate of the Royal Veterinary College, Copenhagen, is chief inspector and advisor for Norwegian furbreeding. His special fields of interest are management, breeding, and diseases of mink and foxes. He visited the University of Wisconsin; Grafton, Hamburg, and New Holstein in Wisconsin; the United States Furbearing Animal Experiment Station, Saratoga Springs, N. Y.; the United States Department of Agriculture, Washington, D. C.

Johs L. Flatla, graduate of the Royal Veterinary College, Copenhagen (1931), is professor of Medicine and director of Medical Clinic, Norwegian Veterinary College, Oslo. His special field of interest is clinical medicine. He visited Beltsville, Md., the University of Wisconsin, University of Minnesota, Iowa State College, Michigan State College, Ohio State College, and Cornell University. The countries visited enroute to the United States were Denmark, Sweden, Belgium, Germany, Switzerland, and Italy.

Arne Helgebostad, a graduate of the Royal Veterinary College, Copenhagen (1935), is director of the State

Experiment Station for Furbearing Animals. His special fields of interest are the diseases and management of furbearing animals. He visited the United States Furbearing Animal Experiment Station, Saratoga Springs, N. Y.; the University of Wisconsin, University of Minnesota, Cornell University, Michigan State College, Fromm Laboratories, Inc., Lederle Laboratories; Purina Mills Research Farm, St. Louis, Mo.

Leif Sorum, a graduate of the Norwegian Veterinary College, Oslo (1943), is department chief in the Government Diagnostic Laboratory (Veterinary Institute), Oslo. His fields of interest are virology, pathology, vaccine production. He visited Beltsville, Md., the National Institutes of Health and the Naval Medical Research Center at Bethesda, Md., Cornell University, and Michigan State College.

Sigurd Ullestad, a graduate of the Royal Veterinary College, Copenhagen (1928), is district government veterinary officer at Voss. His special fields of interest are clinical medicine and food hygiene. He visited Cornell University, the stockyards at Chicago, University of Illinois, University of Kentucky; U. S. Bureau of Animal Industry, Washington, D. C.; University of Pennsylvania.

Lars Slagsvold, a graduate of the Royal Veterinary College, Copenhagen (1909), is director of Veterinary Services in Norway. His special fields of interest are administrative control of diseases of livestock and meat hygiene. He visited the U. S. Bureau of Animal Industry, Washington, D. C.; the University of California, Washington State College, University of Minnesota, Iowa State College, the stockyards in Minneapolis and Chicago; the University of Wisconsin, Michigan State College, Cornell University; Lederle Laboratories, Quarantine Station, Clifton, N. J.; University of Pennsylvania; several poultry processing plants in Delaware, many practitioners, and Beltsville, Md. Doctor Slagsvold's tour included most of the states. He has on numerous occasions visited most countries in Europe.

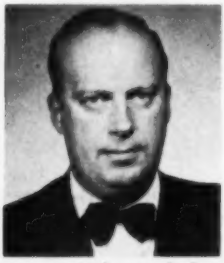
Jon Teige, a graduate of the Royal Veterinary College, Copenhagen (1931), is associate professor in Ambulatory Clinic and Obstetrics. His special fields of interest are clinical medicine and breeding diseases of animals at the Norwegian Veterinary College, Oslo. He visited Beltsville, Md., the University of Pennsylvania, Rutger's University, Cornell University, University of Kentucky, University of Wisconsin, University of Minnesota, Iowa State College, Kansas State College, Colorado A. & M. College, Wyoming Hereford Ranch, University of California, Texas A. & M. College, and the King Ranch in Texas.

Rolf Sverkerud, a graduate of the Norwegian Veterinary College, Oslo (1941), is director of Diagnostic Services, Government Diagnostic (Serum) Laboratory, Oslo. His special field of interest is diagnosis of infectious diseases of animals. He visited the University of Pennsylvania, Rockefeller Institute, Cornell University, Michigan State College; Pathology Division, Bureau of Animal Industry, Washington, D. C.; Wilson & Company, Chicago, Ill.; the University of Wisconsin, Purdue University, University of Illinois, Iowa State College, Lederle Laboratories, Sharp & Dohme, Inc., Parke, Davis & Co.

H. F. Wirstad, a graduate of the Royal Veterinary College, Copenhagen (1922), is professor of Veterinary Surgery, Norwegian Veterinary College, Oslo. His special fields of interest are surgery and radiology. He visited the University of Wisconsin, Iowa State College, Cornell University, University of Pennsylvania, Colorado A. & M. College, Ohio State University. Professor Wirstad travelled extensively in Europe prior to his present appointment in 1937.

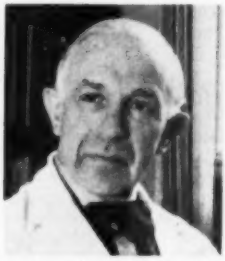
Sweden

Gustav Danelius is state veterinarian, Uppsala, Sweden. His special fields of interest are equine breeding diseases and obstetrics. He visited the University of Kentucky, University of Pennsylvania, Iowa State College, Cornell University, University of Connecticut. Doctor Danelius, an associate editor of the "Cornell Veterinarian," has visited the United States four times since 1926; he studied as a Rockefeller scholar in that year.



Ingemar Alstrom, a graduate of the Royal Veterinary College, Stockholm (1935), is city veterinarian in Stockholm. His special fields of interest are food hygiene and mastitis control. He visited the University of Pennsylvania, Cornell University, Michigan State College; Swift & Company's Research Laboratories, Chicago; American Meat Institute, Chicago; University of Wisconsin, University of Minnesota, Mayo Clinic, Iowa State College, University of California, Montana State College, Washington State College, Colorado A. & M. College, Kansas State College, University of Kentucky; Bureau of Animal Industry, Washington, D. C., and Beltsville, Md.; Rockefeller Institute, Princeton, N. J.; Sharp & Dohme, Jensen-Salsbery Laboratories, Inc., Pitman-Moore Laboratories, Lederle Laboratories.

Sven E. L. Dyrendahl, a graduate of the Royal Veterinary College, Stockholm (1942), is associate professor in the Department of Animal Nutrition, Hygiene, Breeding, and Genetics, Royal Veterinary College, Stockholm. His special fields of interest are animal nutrition, hygiene, and breeding. He visited Lederle Laboratories, Merck & Company, Cornell University, New York Zoological Gardens, University of Pennsylvania, Bureau of Animal Industry at Washington, D. C., and Beltsville, Md., University of Missouri, Iowa State College. Doctor Dyrendahl is a member of the organizing committee of the Fifteenth International Veterinary Congress to be held in Stockholm this month.



Albert Hjarre, a graduate of the Royal Veterinary College, Stockholm (1922), is director of the Veterinary Medical Institute of Sweden. He is a member of the Scientific Board of the Veterinary Council and of the Army Veterinary Council; honorary member of the American Veterinary Medical Association. His special fields of interest are diagnosis and control of infectious diseases of animals and poultry. He visited the Bureau of Animal Industry in Washington, D. C., and Beltsville, Md.; Rockefeller Institute in New York and Princeton, N. J.; Lederle Laboratories, U. S. Public Health Service, Bethesda, Md.; New Jersey Agricultural Experiment Station, New Brunswick; University of Pennsylvania, Cornell University, University of Wisconsin, Iowa State College, University of Minnesota, Michigan State College, Purdue University, Mayo Clinic, and Fromm Laboratories, Grafton, Wis. Doctor Hjarre has published over 70 scientific publi-

cations on various fields of pathology of domestic animals and poultry. He has collaborated in the publication of textbooks in general pathology.

Bertil Hjelmqvist, a graduate of the Royal Veterinary College, Stockholm (1948), is district veterinarian in Follinge, Sweden. His special fields of interest are meat hygiene and control of animal diseases. He visited the University of Minnesota, Colorado A. & M. College, Cornell University, several practicing veterinarians in various states, and the Wyoming Hereford Ranch.

Kjellake Tullberg is city veterinarian, Halsingborg, Sweden. His special fields of interest are meat hygiene, control of diseases of livestock, public health. He visited the Harvard School of Public Health, Boston Health Department; Bureau of Animal Industry in Washington, D. C., and Beltsville, Md.; Health Department of District of Columbia, United States Public Health Service in Washington, D. C., Montgomery, Ala., Savannah, Ga.; Alabama Polytechnic Institute, Tuskegee Institute, Florida State Health Department, Dallas City Health Department.

Nils Lagerlof, a graduate of the Royal Veterinary College, Stockholm (1919), is professor of Obstetrics and Gynecology, Royal Veterinary College, Stockholm. His special fields of interest are obstetrics and gynecology. He visited the Bureau of Animal Industry, Washington, D. C.; Cornell University, Pennsylvania State College, Ohio State University, University of Kentucky, Michigan State College, University of Illinois, University of Wisconsin, Iowa State College, Norden Laboratories, Kansas State College, Wyoming Hereford Ranch, University of California. Professor Lagerlof studied in the United States in 1930 under Dr. W. L. Williams at Cornell. He has travelled extensively in many countries in Europe and has published over 100 scientific manuscripts on reproductive problems of domestic animals, in which field he is internationally recognized.

Fritz Nilsson, a graduate of the Royal Veterinary College, Stockholm (1936), is regimental veterinarian of the Royal Scanian Cavalry in Halsingborg, and consultant in Surgery in Sweden (formerly assistant chief of the Department of Surgery, Royal Veterinary College, Stockholm). His special field of interest is veterinary surgery, especially orthopedic surgery. He visited the Angell Memorial Animal Hospital, Boston; Colorado A. & M. College, Cornell University, University of Pennsylvania, Iowa State College, Kansas State College, Ohio State University, Institute of Experimental Medicine of the Mayo Foundation, University of Kentucky, several practitioners in many states. Doctor Nilsson studied in the United States under scholarships from the Swedish Veterinary Medical Board, the Royal Veterinary College, and the Swedish-American Foundation. He is well known for his work in surgery and has published 15 articles in this field.

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Dr. Krabbe Not Pictured

Agnete Krabbe, a graduate of the Royal Veterinary College, Copenhagen (1941), is associate professor in Small Animal Clinic, Royal Veterinary College, Copenhagen. Her special fields of interest are surgery and diseases of small animals, and zoological work. She visited the Angell Memorial Animal Hospital, Cornell University, Michigan State College, Mayo Institute, the Bronx and Staten Island Zoological Parks, and several small animal hospitals in various cities.

Colonel Wm. E. Jennings, V. C., Fort Sam Houston, Texas, assembled the data and the pictures of these veterinarians from Sweden, Norway, Denmark, and Germany, who have visited the United States in recent years, for publication in the JOURNAL.

Colonel Jennings is chairman of the Committee on Foreign Veterinary Colleges of the AVMA Council on Education.

The American Veterinary Practitioner – A Survey

S. DUTKA, M.A., and A. APPLEBY, D.V.M., M.S.

New York, New York

IN THE FALL of 1952, the Medimetric Institute mailed a four-page questionnaire to a large number of veterinarians in the United States. The purpose of the survey (*see* JOURNAL, Dec., 1952: 500) was to gain information about the practicing veterinarian and his practice. This automatically excluded veterinarians engaged in research, industry, teaching; those employed by city, state, or federal government; and those in the Armed Forces or retired.

Thirty-four per cent of those receiving questionnaires responded.

SAMPLING PROCEDURE

The 1952 "Directory" of the AVMA was used as the basic source of names, addresses, and classification of professional activity. A questionnaire was sent to every veterinarian listed in alternating columns of the "Directory," regardless of whether they were practitioners, thereby eliminating bias in the choice of names.

The surprisingly large response (34%) to this first mailing came from all fields of veterinary activity. However, it is statistically incorrect to assume that responses of those who did not answer the initial mailing are the same as those who returned their questionnaires. (This is one error which was attributed to the "pollsters" in predicting the results of the 1948 presidential election when they assumed that the "undecided" respondents would have answered in the same proportion as the others.)

In order to overcome the possibility of the "nonresponse bias" in this study, a representative subsample of 433 of those who did not answer the initial mail questionnaire was selected for follow-up, personal interviewing. Each of these was interviewed at his home or office and requested to fill out the questionnaire. Only 9 per cent of this group refused to do so. The figures presented in this study are chosen from the large masses of data derived from the analysis of 1,273 questionnaires obtained from veterinarians who stated that they received the largest portion of their professional veterinary income in 1951 "from active practice."

Mr. Dutka is director and Dr. Appleby is veterinary consultant of the Medimetric Institute, New York, N.Y.

VALIDITY OF RESULTS

Since the questionnaire was sent to a "probability sample" in which each veterinarian's chance of being included in the sample is equal, the statistical sampling error or tolerance can be computed. In general, the approximate sampling tolerances given in table 1 hold for this study "at the 19 in 20 probability level."

TABLE I—Approximate Sampling Tolerances

Size of reported percentage	Approximate sampling tolerance
10% or 90%	2.4%
20% or 80%	3.1%
30% or 70%	3.6%
40% or 60%	3.8%

This means, for example, that where either 10 per cent or 90 per cent of the 1,273 practicing veterinarians answered in a certain way, these percentages have a 19 in 20 chance of being no more than 2.4 per cent higher or lower than they would have been if every practicing veterinarian in the United States had been questioned and had answered.

THE PRACTITIONER TODAY

This study shows that half of the veterinarians practicing today have been doing so for nine years or less, while 25 per cent have been in practice twenty-five years or more. The average duration is fourteen years, and the specific break-down is as follows:

under 5 years	21.6 per cent
5-9 years	28.1 per cent
10-14 years	13.7 per cent
15-19 years	7.9 per cent
20-24 years	3.1 per cent
25 years or more	25.1 per cent
no answer	0.5 per cent

According to this survey, about 43 per cent of practicing veterinarians are engaged primarily in large animal practice, 27 per cent in mixed practice, and about 30 per cent mainly in small animal practice.

These men average 42 years of age (54% are between 30 and 44 years old). The following information was compiled concerning marital status:

married	91.1 per cent
single	5.5 per cent
widowed	2.0 per cent
divorced or separated	0.9 per cent
no answer	0.5 per cent

One question which was asked was: "Have you taken any additional specialized training or postgraduate professional courses since leaving veterinary school?" Of the practicing veterinarians, 20.3 per cent answered "yes," 73.6 per cent answered "no," and 6.1 per cent did not answer.

At least 90.1 per cent of the practitioners (97.4 per cent of those reporting) own one or more automobiles, and 60 per cent operate a hospital and/or boarding kennel in addition to an office.

The following were answers to other questions:

"In your practice, do you have occasion to treat bovine mastitis?"

yes	78.0 per cent
no	21.4 per cent
no answer	0.6 per cent

"Do you perform surgery?"

yes	96.1 per cent
no	2.1 per cent
no answer	1.8 per cent

The surgical procedures most commonly performed during the month (fall) immediately preceding this study, and the percentage of veterinarians who perform them, are:

castration	83 per cent
wound repair	81 per cent
spaying	81 per cent
obstetric delivery	79 per cent
surgical treatment of abscess	77 per cent

"Do you feel that the druggists in your area are making an active effort to sell veterinary products directly to the owners of animals?"

yes	68.7 per cent
no	20.4 per cent
don't know	10.4 per cent
no answer	0.5 per cent

"In general, do you find the detail men you see helpful in your practice?"

yes	76.4 per cent
no	20.4 per cent
no answer	3.2 per cent

Treatment of Bite Wounds in Monkeys

Many cases of puncture wounds, received in fights between the monkeys, are treated at Lincoln Park Zoo in Chicago. They are mostly wounds produced by biting and vary in the trauma and tissue damage produced. The cases are presented as soon as noticed, varying from minutes to days after the injury.

In the animals treated, the temperatures varied from about 100 F., which is normal, to 106 F. The treatment consisted of topical antibiotics, such as terramycin and aureomycin ointments when possible, and daily injections in the gluteal muscles with 100,000 to 300,000 units of penicillin; in some cases surgical drainage was provided. In almost 95 per cent of all cases so treated, recovery was uneventful and complete. No side reactions were noted to the repeated use of penicillin in the monkey.—*L. E. Fisher, D.V.M., Berwyn, Ill.*

Cows on Rubber Floors in Sweden

A cowbarn, at Blentarp, Sweden, with its floors and gutters covered with rubber, has been used for three years without showing signs of wear. The rubber is vulcanized on sheets of metal which are then fastened to the floor by screws and the rubber strips vulcanized, so there are no seams. No bedding is required and small corrugations in the rubber allow air to circulate beneath the lying cow. An automatic gutter cleaner, with its snugly fitted steel scraper, works every twenty minutes, day and night, pushing the excreta into a manure pit. The floor is scrubbed once a day with a broom but no water is used in the gutters. The floor is expected to last about twenty years.—*Hoard's Dairyman, March 25, 1953.*

Lungworms in Cattle.—The Oklahoma Veterinary Research Institute reports that lungworms in cattle may be controlled by continuous low-level phenothiazine therapy. In a herd of 500 severely infested calves, death losses were stopped by feeding 2 Gm. of phenothiazine per head daily. In six weeks the larvae in the feces were reduced to zero, and an uninfected calf kept in the same pen did not become infested.—*Du Pont Circular 2, 1953.*

Supplement to Exhibit on Neoplasms of Domestic Animals

Avian Lymphomatosis

This group of neoplastic diseases of fowl is also known as fowl leukemia, fowl leukosis, and avian leukosis complex. It constitutes one of the most important disease problems in the poultry industry today. Four types of lymphomatosis are commonly recognized.

1) Visceral lymphomatosis (big liver disease).
2) Neurolymphomatosis (fowl paralysis).
3) Ocular lymphomatosis (grey eye).
4) Osteopetrotic lymphomatosis (thick leg disease).

The liver, kidney, spleen, and ovary are most frequently involved in visceral lymphomatosis. Characteristic lymphoid infiltrations are seen microscopically. The brachial plexus and the sciatic nerves are commonly affected in the neural form. Ocular lymphomatosis is characterized by mononuclear infiltrates in the iris. Osteopetrotic lymphomatosis involving the legs is the rarest form, and there is some question that it belongs in this group. Several workers have described transmissible agents, viral in nature, for this group of neoplastic diseases. These agents resemble that of the Rous sarcoma. Closely related to this group are several leukemias also due to transmissible agents. The "lumpers" incorporate both types into one group of neoplastic diseases.

Testicular Neoplasms of the Dog

Three types of testicular neoplasms occur in the dog:

1) Seminoma (germ cell neoplasm).
2) Interstitial cell tumor (Leydig cell tumor).
3) Sertoli cell tumor (tubular adenoma).

These are seen regularly, especially in old dogs. Teratomas and chorio-epitheliomas have not been observed in the canine testis. Seminomas arise in scrotal and cryptorchid testes and are frequently bilateral. Metastases to regional lymph nodes occasionally occur. The interstitial cell tumors are small, vascular, and unilateral. They are frequently seen in conjunction with seminomas. Metastases are not common. The Sertoli cell tumor is the only one of the three that produces a clinical hormonal disturbance. These tumors may elaborate estrogens that produce definite clinical feminization, characterized by sexual attraction for other males, shrinkage of the opposite testis, mammary hypertrophy, and loss of hair. Atrophy of the opposite testis and prostatic hypertrophy with squamous metaplasia are the pathological features. These neoplasms can become relatively large and metastasis occasionally occurs. All three of these neoplasms have been seen in one dog, and it is not unusual to find two, usually seminoma and interstitial cell tumor.

Neoplasms of the Urogenital Tract (Exclusive of Canine Testicular Neoplasms)

An entity in the dog, known variously as transmissible lymphosarcoma, venereal sarcoma, venereal granuloma, and transmissible venereal tumor, is transmitted or transplanted by coitus and can be transplanted experimentally with intact tumor cells. It sometimes regresses spontaneously and is capable of inducing immunity. It is seen on the external genitalia of both sexes.

The most frequent neoplasm of the bovine ovary is the granulosa cell tumor which may reach huge proportions.

In the canine ovary, papillary cystadenomas and papillary adenocarcinomas are probably the most common neoplasms, although an occasional dysgerminoma or granulosa cell tumor has been reported.

Squamous cell carcinoma of the equine penis has been observed, and a lesion on the bovine penis that is histopathologically compatible with fibrosarcoma is fairly frequent. The bovine penile tumors are not known to metastasize and may occasionally even regress.

Embryonal nephromas or nephroblastomas are common in fowl and swine, and are similar in some respects to Wilms' tumor of children.

Neoplasms of the Skin and Adnexal Structures

Epithelial neoplasms are seen most frequently in the dog, because the dog is al-

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Prepared by Major C. A. Gleiser, V.C., for distribution from the exhibit of "Neoplasms of Domestic Animals", which is presented by the Armed Forces Institute of Pathology, in coöperation with the AVMA.

lowed to live his life span and reach old age. The longevity of other domestic animals is cut short for economic reasons.

The behavior of the squamous cell carcinoma, basal cell carcinoma and the sebaceous gland tumors is essentially analogous to the behavior of these neoplasms in man. Sweat gland tumors are of interest, especially in the dog because of the popular misconception that this animal has no sweat glands. The dog does have sweat glands widely distributed over his body, but they are not functional under normal environmental conditions. Mammary neoplasms common in the old bitch, and the mixed mammary tumor, which is composed of epithelial and mesodermal (connective tissue, cartilage, and bone) elements, are the most frequent. Adenomas, fibroadenomas, and adenocarcinomas, often with widespread metastases, are also encountered.

The perianal gland adenoma is peculiar to the dog. These glands are not confined to the perianal region but are found in the skin of the back and the base of the tail.

Infectious papillomas, as seen in young dogs and in cattle, are apparently capable of producing immunity. They are essentially comparable to the verruca of man.

NEOPLASIA OF THE EYE IN CATTLE

The prevalence of neoplasia of the eye and orbital region in cattle has been well established. It is greatest in the Hereford breed but Holstein-Friesians and white Shorthorns are also frequently subject to the tumor. It may develop on eyelids, membrana nictitans, or bulbar conjunctiva, usually on the corneoscleral junction, both medially and bilaterally. The lower eyelid appears to be more frequently involved than the upper. Multiple tumors are found in one eye, in both eyes, and in associated structures. Instances have been observed with tumors medially and laterally at the corneoscleral junction, on the membrana nictitans, and on both eyelids of one eye.

The types and patterns of growth have been investigated but the various studies have been based on more advanced tumors obtained from unrelated animals at slaughterhouses. It has been postulated that these tumors may be associated with local pigmentation, solar radiation, soil condition, inheritance, and other factors. Investigations in cattle may serve to cast light on the etiology of the apparently spontaneous tumors in this region, and thus on the development of neoplasia in general.

NEOPLASMS OF LYMPHATIC TISSUES

Lymphosarcomas are seen often in cattle, dogs, and cats and may involve many organs.

NEOPLASMS OF DOMESTICATED ANIMALS
ANIMAL NEOPLASMS IN MEDICAL RESEARCH
INCIDENCE OF NEOPLASIA IN FOOD PRODUCING ANIMALS

Exhibit on Neoplasms of Domestic Animals displayed at the A.M.A. Annual Meeting in New York City, June 1-5, 1953, and at the AVMA Annual Meeting in Toronto, July 20-23, 1953.
This exhibit was produced by the Armed Forces Institute of Pathology, in cooperation with the AVMA Committee on Scientific Exhibits.

Myelogenous leukemia is rare in animals, in fact some workers are of the opinion that there is no undisputed reported case of myelogenous leukemia in animals.

NEOPLASMS OF NERVOUS TISSUES

Primary intracranial tumors, occasionally seen in animals, include oligodendrogliomas, medulloblastomas, ependymomas, astrocytomas, and other tumors of questionable nature.

Multiple neurofibromas involving the heart, nerve plexuses, and nerves have been seen in the cow. Multiple dermal fibromas have been described in the horse, dog, and deer. Solitary neurofibromas in subcutaneous tissues are common in the dog.

NEOPLASMS OF MESODERMAL ORIGIN

Neoplasms (benign and malignant) of connective tissue, muscle (voluntary and involuntary), cartilage, and bone have been reported in a wide variety of animals, domesticated and nondomesticated, and are more frequent in young animals.

MISCELLANEOUS NEOPLASMS

Carcinoma of the prostate, although it may occur in old dogs, is rare. Prostatic hypertrophy and hyperplasia, on the other hand, are common in old dogs.

Carcinomas of the stomach and intestine are rare in animals.

Aortic body tumor and heart base tumor have been observed in dogs, particularly in bull types (Boston Terrier, English Bull, Boxer), at the base of the heart and at the arch of the aorta. These neoplasms are well described by Cecil Johnson in his excellent monograph on animal neoplasms.

Carcinomas and adenomas of the adrenal gland, most frequently seen in cattle, do not produce clinical syndrome but may reach immense proportions. Davis has also described them in the sheep.

Primary pulmonary neoplasms in animals are usually in the form of bronchogenic and alveolar cell or terminal bronchiolar carcinomas. A monograph on pulmonary neoplasms has recently been published by Dr. William S. Monlux of Iowa State College.

Benign and malignant neoplasms of the thyroid gland have been observed infrequently in domesticated and nondomesticated animals. The malignant neoplasms assume a solid or follicular pattern and may metastasize.

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*These general references contain excellent bibliographies.

Rabies in Sheep in Rhodesia

On June 21, 1952, rabies was suspected in a flock of 150 Merino sheep. They were thought to have been bitten by a honey badger (ratel) on June 1. During the previous three months, rabies had been diagnosed in several jackals and in 4 honey badgers in the neighborhood. One sheep was dead, 2 were in a coma, and 11 were showing abnormal behavior. One was chewing the wool of lambs and was excited, displaying twitching of the lips, restlessness, and aggressiveness.

None of the others were aggressive but one was salivating profusely and was dyspneic. The others were restless with abnormal sexual behavior, riding each other continuously with twitching lips and wild staring eyes. Healed wounds were found in 40 sheep which apparently had been bitten on the face or neck. No bleating was heard, nor was there any itchiness of the scars. Negri bodies were found in the hippocampus of the first 3 animals examined. In all, 47 sheep died. Most cases showed symptoms at nineteen to twenty-seven days after being bitten. Several died five to seven days after showing symptoms. At least 7 died in about twenty-four hours after the first symptoms were evident.—*Vet. Rec., April 25, 1953.*

Sodium borate, when correctly applied to the soil in exercise pens, is effective in detroying canine hookworm larvae.—*J. E. Greene, D.V.M., Auburn, Ala.*

Intraarterial Transfusion

WILLIAM P. BARCHFELD, V.M.D.

Apollo, Pennsylvania

Intraärterial transfusion of blood or blood substitutes under pressure is gaining popularity in human surgery for the treatment of acute hemorrage and traumatic shock.[1] This method produces dramatic results yet is fast and safe. It can be applied to dogs with a few changes of technique and location.

Intravenous transfusions are slow to build up arterial pressure and volume. If the fluid is given fast, the heart is often embarrassed and the respiratory circulatory system is overloaded.

Among the advantages of intraärterial transfusion[2] are: rapid restoration of blood pressure, as well as volume, and immediate perfusion of cerebral and coronary arteries and those to other vital organs. Moreover, the same volume of blood has twice the improvement value as when given intravenously.

Disadvantages include the necessary special apparatus, the possibility of leaks or disruption of the apparatus under pressure, sacrifice of the artery following cannulation, danger of air embolism, and the possibility of tissue necrosis in the extremity following prolonged infusion unless it is perodically interrupted to allow the infusion with oxygenated blood.

The femoral artery, where the pulse of the dog is taken, is readily accessible when the animal is placed on its back, as it is for many surgical procedures.

Puncture of the femoral artery, which necessitates its subsequent sacrifice because of the ligation, is not to be recommended except in an emergency. However, two branches of the artery (the posterior muscular and the saphenous) are available and of sufficient size to be used.

The femoral artery lies in the femoral groove, usually under the posterior portion of the sartorius muscle. In some dogs, the sartorius muscle is entirely anterior and only the skin and fascia cover the vessels. The saphenous vein lies posterior to the artery and the saphenous nerve is usually superficial to it. The muscular branch of the artery (there may be two) is found about the middle of the thigh; 1 to 2 in. lower, depending on the size of the dog, is the saphenous branch. Both branches course posteriorly over the vein and can be followed without difficulty.

To expose these arteries, an incision about 2 in. long is made about the middle of the thigh directly over the pulsating femoral artery. If the sartorius muscle covers the artery, split it lengthwise over the artery and draw the edges apart. Then strip off the fascia until the nerve and vessels are exposed. Pull the nerve forward and look for either of the two arterial branches. In a small dog, the muscular branch will take only a 20-, or smaller, gauge needle. The saphenous branch will usually take a 19-, or larger, gauge needle.

Fig. 1—An air reservoir bottle, when inserted into the line, allows more constant pressure during an intra-arterial transfusion.

Select one artery for transfusion, expose it for about ½ in. and clamp it distally with forceps. Pass a suture under it close to the juncture with the femoral artery. Nick the artery with scissors just proximal to the forceps. Pass a blunted needle of the largest possible size into the lumen as far as the femoral artery. Tighten the suture over the needle and connect the filled transfusion apparatus. Ligate the artery

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distal to the forceps and remove the forceps.

The blood, or other fluid, is injected under pressure as fast as it will flow through the needle. Pressure may be supplied by using a Shikles air bulb connected to the air vent needle in the transfusion

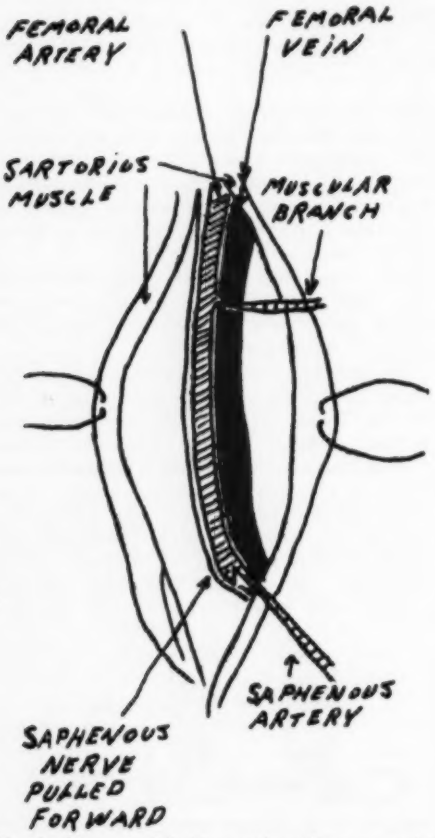

Fig. 2—Diagram of incision made midway on medial surface of thigh (right leg), directly over pulsating femoral artery.

bottle. An air reservoir bottle may be inserted into the line, or a tank and bicycle pump may be used. This reservoir allows more constant pressure (fig. 1). Clamps on both connecting tubes allow for changing the transfusion bottle without having air enter the tubing. Thick-walled tubing should be used for all connections, and the bottle stoppers must be fixed so the pressure will not blow them out.

After the transfusion is completed, the needle is withdrawn and the ligature is tightened or another is added. The wound is then closed.

Both the muscular and saphenous arteries have been ligated at the same time in the same leg without apparent injury. Ligation of the femoral artery, however, produces a cool leg and a limping dog, but the dog gradually recovers.

Blood can be collected from the femoral artery without the use of a vacuum if there is an air vent from the collection bottle. This works well on dogs which are presented for euthanasia and helps to keep the blood bank supplied.

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Hormones and Uterine Infection

Attempts at transplantation of a fertilized bovine ovum were without success until accomplished by laparotomy in 1952. One reason was that interference with the uterus, which was necessarily done during the luteal phase, often resulted in severe infection. Experiments were then carried out to determine the relationship between ovarian hormone and the susceptibility of the uterus to infection. During estrus, the uterus seemed remarkably resistant to infection, whether introduced with the semen or as a culture, while during the luteal phase it was susceptible and pyometritis often resulted.

Experiments on ovariectomized cows then revealed that progesterone promotes conditions suitable to certain infections while exogenous estrogen stimulated resistance. Uterine infections thus may be established and controlled with varying doses of ovarian hormone. This may explain why cows spontaneously recover from infections during a series of heat periods without coitus. Bulls do not recover spontaneously, probably because testosterone has an effect similar to that of progesterone in cows. It is suggested that estrogens might be beneficial in treating *Vibrio fetus* and Trichomonas infections in the bull.—*Vet. Rec., May 30, 1953.*

Rumen Surgery

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Fort Collins, Colorado

IT SHOULD NOT be necessary to go into detail on the various operations for the relief of the traumatic reticulitis syndrome for most veterinarians in large animal practice are already familiar with at least one technique of rumenotomy which they have adapted to suit their own needs; however, a few points, which may give rise to difficulties and even controversies in the performance of this operation, will be mentioned.

As far as can be ascertained, the first rumenotomy was performed ninety years ago by Obich who operated on 13 cases, 9 of which died. These results were perhaps discouraging but it should be remembered that he did not have the benefit of local anesthetic agents, for it was not until 1880 that Koller and Freud discovered cocaine. One statement made by Obich at that time is still true today: "Favorable results can not be expected after the organic changes are advanced." The use of chemotherapy and antibiotics has to some extent modified this statement, but the inadvisability of operating on the obviously toxic, moribund case should still be stressed. Chemical agents and antibiotics can kill bacteria, but they can not repair damaged tissues.

The client should be fully advised with regard to the prognosis of the individual case. In the early stages of the malady, an operation should do no harm. If the animal dies, some cause other than surgical intervention probably is responsible, the exception being the animal that fights, falls, or otherwise contaminates the operative field. Rumenotomy alone can not be considered sufficient surgical correction for the animal with advanced cardiac or pericardial involvement, especially those in which fluid can be heard in the pericardial sac. Remember the adage, "When a man dies, it is an act of God; but when a cow dies, it is the veterinarian's fault!" Operating upon a hopeless case will benefit neither the patient nor the reputation for professional acuity of the surgeon. On the other hand, if clinical examination suggests the presence of foreign bodies and the case is a favorable risk, operate—for, to quote Udall, "the operation apparently does no harm and it may be justified as a diagnostic procedure—the emptying of the rumen is probably beneficial."

When to Operate.—If an acute case is operated upon immediately after a positive diagnosis is made, it usually entails the waste of operating time by having to empty a replete rumen. Placing the patient off feed for about twenty-four hours will allow the rumen to empty somewhat so a cleaner and more expeditious piece of surgery may be carried out; however, in the more chronic case, because of the atonic state of the rumen, no emptying may take place. How long then should a surgeon wait before intervening? Little information is available on this point, but one case is reported where death occurred three to four hours after ingestion of the lethal object — a sharp wire which penetrated one of the main blood vessels of the heart.

In the hyperpyretic case, surgery should be deferred until the temperature is 103 F. or lower.

Anesthesia.—Paravertebral anesthesia is preferred but the technique is not always

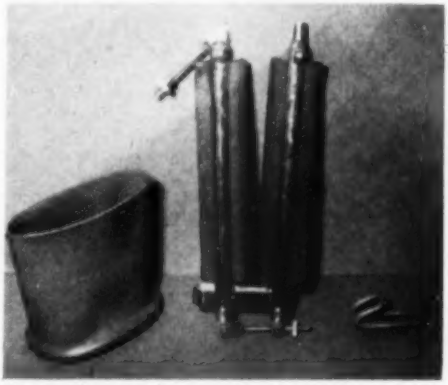


Fig. 1—The set of instruments devised by Dr. McLintock (left to right)—the tube, clamp, and hook.

From the Department of Surgery, Colorado A. & M. College, Fort Collins.

Presented before the seventy-ninth annual meeting of the Ontario Veterinary Convention, Ottawa, Jan. 15, 1953.

The author is indebted to Dr. J. McLintock, Norwich, England, for making a set of his instruments available.

Fig. 2—The skin incision has been made and a plastic drape with a window the same size as the incision is fixed in position. Note the fixation of the towel forceps.

easy on the excessively fat animal with no prominent landmarks. In such cases, an inverted "L" block, using a 2- to 3-per cent procaine solution, will produce adequate anesthesia. Stronger solutions are contraindicated because of the possibility of their causing tissue necrosis. Intravenous narcosis with chloral hydrate or nembutal[3] may quiet the restive animal but also may induce it to lie down during the operation, with possible embarrassment to patient and surgeon alike.

Draping the Field.—For the maintenance of an aseptic technique, a drape is a necessity, but a wet drape is a contaminated drape which produces a false sense of security. For the past year, plastic drapes have been used and they seem infinitely superior to the linen or cotton shrouds previously used. A large drape is preferable since a small one is a source of constant annoyance despite its fixation by forceps around the site of incision.

Technique of Operation.—The incision is made 2 in. behind and parallel to the last rib. For the average-sized man working on a large animal this site is advantageous. For the McLintock technique,[1] however, it is advisable to use the middle of the paralumbar fossa.

The muscles are incised boldly to prevent shredding of the fibers which results when a timid incision is made. Although the region may be completely anesthetized, stimulation of the fibers is caused by the scalpel. Clean-cut muscle incisions heal more quickly than ragged incisions.

Fig. 3—The rumen has been pulled through the incision, a 5-in. ruminal incision has been made, the hook inserted, and the tube about to be inserted.*

Fig. 4—The hook has been removed and the tube is in position. Note how the rumen grasps the ring portion of the tube.*

*For simplicity of explanation, the drapes have been removed prior to taking some of the pictures.

[1]McLintock, J.: An Improved Technique in Rumenotomy. Vet. Rec., 61, (1949):583.

The rumen is then sutured to the skin edges by means of a continuous suture of braided nylon. It is safer than relying on a layman to hold the rumen in place by retention forceps. Before applying this suture, the rumen should be pulled slightly out of the skin incision so that adequate peritoneal surface is exposed for subsequent closure of the viscus. In addition, a lip will be formed over which rumen fluids can drain to the exterior.

The incision in the rumen should be sufficiently long to permit the introduction of a hoop and apron and the operator's arm without bruising the incision edges. The hoop and apron are necessary if spillage into the peritoneal cavity is to be prevented.

Ingesta and fluids should be removed only to the extent necessary to gain access to the floor of the reticulum. A full rumen precludes easy approach to the reticular floor, while excess ruminal fluids will hinder the efficient closure of the rumen.

A magnet carried into the reticulum will pick up any loose ferrous material present, including penetrating foreign bodies after their removal from the wall of the reticulum. Determine the presence of any adhesions, their extent, and consistency. Remove any penetrating objects with care to avoid aggravating a previously localized peritonitis. For this same reason, adhesions should not be broken down. Search quickly but carefully for foreign bodies in all cells of the reticular "honeycomb" and also the region of the cardia, esophageal groove, and entrance to the omasum; also, remove any stones and sand for they may predispose to ulcer formation and the entrance of pathogenic bacteria.

Fig. 5—The cuff of the tube has been folded back and a second plastic drape applied.

Fig. 6—After examination of the reticulum is completed, the tube is held out and the clamp applied underneath the tube.

Pain in the sternal region does not necessarily signify a "wire," as it may be any noxious physical or bacterial agent involving that region. Search the rumen before withdrawing the magnet and arm.

Closure of the rumen is effected by a continuous row of Lembert sutures using No. 1 medium chromic catgut with swaged-on needle. A reinforcing row of three or

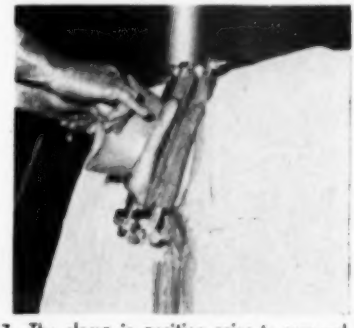


Fig. 7—The clamp in position prior to removal of the tube (side view).

four interrupted Lembert sutures is superimposed.

The method used in closing the abdominal incision depends on the bulk of tissue involved. If the muscle layers are thin, all may be included in a row of interrupted No. 3 catgut sutures which includes also the peritoneum and associated transversalis fascia. On the other hand, if a layer of fat is interposed between the internal and external oblique muscles, two rows of sutures are employed. The method of closure will probably vary with the preference of the surgeon and the particular case undergoing surgery. The words of Halstead, "co-aptation without strangulation," should be ever on one's mind when closing an abdomen.

A continuous lock suture using dermalon, or some other form of monofilament nylon, provides a neatly applied, quick, and efficient closure of the skin.

Skin sutures should be removed in seven days unless the animal is toxic, in which case they should be left until the patient has recovered and healing is complete.

Complications.—Reticulitis with frothy bloat does not appear to be a common complication but when encountered after opening the peritoneal cavity, the contents of a bottle of rumene or tympanol should be injected into the rumen before incision of that organ. By this method, there will be less chance of peritoneal contamination by the frothy material.

Fig. 9—The completed operation. Note the lock stitch.

Postoperative emphysema sometimes occurs twenty-four to thirty-six hours after surgery. The most probable cause appears to be the influx of air through an imperfectly closed abdominal incision. It may also be seen in the restless animal which fidgets excessively during the operation. As long as the skin temperature remains the same as that of the skin of the trunk, there will be no occasion for alarm. If the skin becomes cold, however, it should receive attention.

The McLintock Technique.—The three special instruments for this technique in rumenotomy consist of a rubber-covered hook, a rubber tube with flexible rim, and a set of clamps for holding the rumen while suturing (fig. 1). Two plastic drapes designed by the writer for use with this set of instruments are also included in the surgical set-up.

It is important that the animal to undergo surgery be starved if possible for twenty-four hours before the operation so that some emptying of the rumen may occur. The self-retaining tube can be used only when the rumen is sufficiently empty to permit its being pulled through the skin incision.

It is also important that the skin and the ruminal incisions are made the correct length (skin, 6 in.; rumen, 4½ to 5 in.).

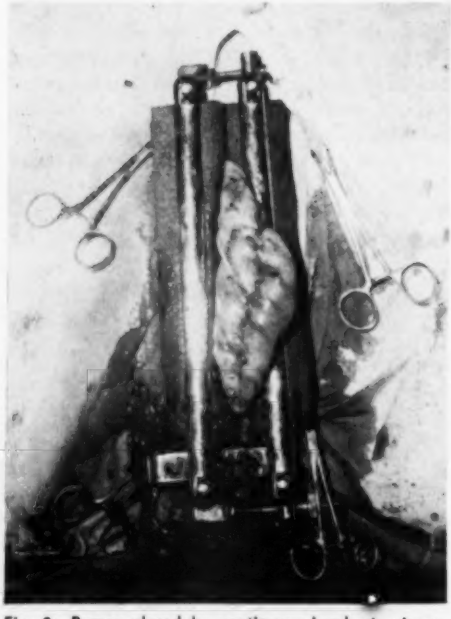


Fig. 8—Rumen closed by continuous Lembert sutures.

otherwise the self-retaining power of the tube will be lost.

Drape 1 has an oval window which coincides with the abdominal incision and completely covers the skin surrounding the incision. This drape is held in place by towel forceps, the jaws of which are placed through strategically positioned grommets in the drape (fig. 2).

The rumen is grasped and pulled through the incision as far as possible. A 1-in. incision is made in the uppermost part of the protruding organ and the hook is inserted and held against the animal by an assistant (fig. 3) while the surgeon extends the ruminal incision downward for another 3½ to 4 in. The hook is then removed. Figure 4 shows how the tube holds the rumen in place. The second drape, which fits closely over the tube, is now placed in position and the free rim of the tube folded back (fig. 5).

After the search of the reticulum and rumen is complete, drape 2 is removed and the rumen is pulled out slightly to allow the clamp to be placed between the rim of the tube and the body of the cow (fig. 6). (Figure 7 shows the clamp in position beneath the tube.) The tube is then removed and the ruminal incision closed (Fig. 8), after which the clamp is removed and the operation completed in the usual manner. Figure 9 shows the skin closure using a continuous lock suture.

Equine Dystocia with Inverted Bladder Containing Intestines

A Belgian draft mare was found in partus with prolapsus vesica; the bladder was filled with intestines in a mass of 3 gallons. Two hours after reaching the farm, it was found impossible to reduce this mass via the vagina. Laparotomy was applied high in the left flank and the operator was able to pass a hand through the inverted urethra into the bladder. At least 3 meters of small intestines, together with the mesentery, were withdrawn from the bladder into the abdominal cavity. The operation required about five minutes.

It took twenty minutes to close the abdomen and, on vaginal palpation, it appeared that the bladder had spontaneously returned to its normal position. After reposition of the laterally turned head a dead foal was born by extraction. The operation wound healed by first intention and the bladder seemed unharmed. On the third day after the operation the mare was turned on pasture.—*Vlaams Diergeneesk. Tijdschr., Jan. 1, 1953.*—L.V.E.

Urethrotomy in Steers

Where urinary calculi occlude the lower portion of a steer's penis, an operation is indicated. The patient is restrained in a standing position and given epidural anesthesia. The operative field is in the median plane, 8 to 10 inches below the anus. After preparation, an incision about 6 inches long is made directly on the median line and a portion of the penis is isolated by blunt and sharp dissection. The penis is then amputated low enough so that 2 or 2½ inches of the proximal stump will protrude through the lower portion of the incision. Two sutures, placed around the corpora cavernosum, are used to anchor the stump to the skin on each side of the incision, and the upper portion of the incision is sutured. No after-care is necessary.—*Iowa Vet., May, 1953.*

First Calves from Frozen Semen

Artificial insemination with semen frozen for storage purposes was first attempted in this country in September, 1952; therefore several calves were due in June. Dr. James Pirie of Cedar Rapids was one of the first users. Ten of the first 12 cows bred conceived on the first service and the other 2 on the second service, even though 2 had been considered as problem cows. Several thousand cows in various locations have now been similarly bred. It is evident that semen frozen and stored at a –79 C. is just as potent after sixty days as it is after three days. How long it will retain its potency is not yet known.

One advantage in this method is that, where it is desired, the large quantity of semen which can be stored makes it possible to breed all the cows in one herd with semen from a single bull.—*Hoard's Dairyman, June 10, 1953.*

Precocious Lactation.—Lactation by virgin females is said to be common in young goats. If the udder is left alone, this secretion usually is of no significance. —*Dairy Goat J., April, 1953.*

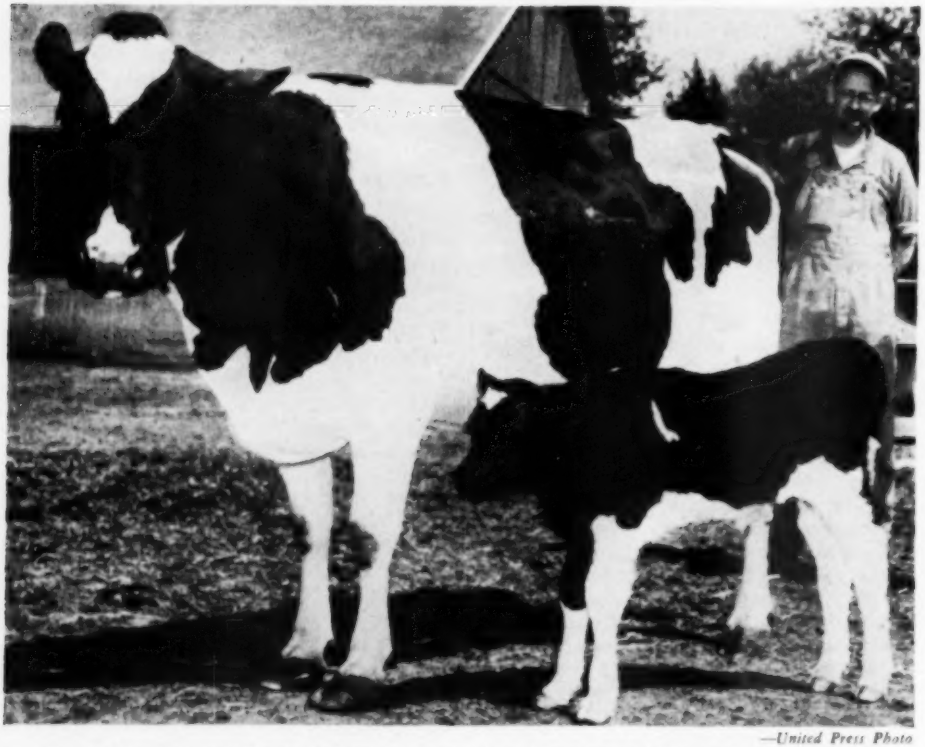
Inguinal Hernia in the Bull

An enlarged hardened scrotum in a 3-year-old Aberdeen Angus bull was diagnosed as an inguinal hernia. When adhesions are absent, and the tunics not thickened, the preferred method of surgical repair is by laparotomy, through the paralumbar fossa, with reduction of the hernia by traction, then suturing the internal inguinal ring with umbilical tape. Such was not considered advisable in this case.

After a 48-hour fast, the bull was anesthetized with 45 gr. of chloral hydrate *per os*, 100 cc. of Millenbruck's solution intravenously, and 20 cc. of 4 per cent procaine hydrochloride solution locally in the region of the external inguinal ring. An incision was made to enlarge the external and internal rings, adhesions were broken down, the hernia reduced, and the testicle removed with an emasculator. Chromic catgut was then used to suture first the internal inguinal ring, then the external ring. The area was packed with sterile gauze and the skin incision sutured with silk. The gauze pack was removed in forty-eight hours. The following day, because of swelling, the scrotal opening was enlarged to allow the escape of blood clots and exudate. The bull was given a five-day course of penicillin therapy, plus local wound tratment. He made an uneventful recovery.—*Iowa State Coll. Vet., No. 3, 1953.*

In 1951, nearly 900 inseminations were made on 570 queen bees.—*U.S.D.A.*

First Live Heifer Calf Produced from Frozen Semen



—United Press Photo

The first live calf, a heifer, to be born in America from frozen semen is the result of research by the Wisconsin Scientific Breeding Institute, in cooperation with the American Foundation for the Study of Genetics. If this process proves successful, there will be fewer but better bulls in the stud and a far wider distribution of the influences of great proved sires.

CLINICAL DATA

Ringworm of Horses and Its Control

EDWARD G. BATTE, D.V.M., M.S., and WILLIAM S. MILLER, B.S., V.M.D.

Haddonfield, New Jersey

RINGWORM of horses, or "girth itch," is an infectious disease of the skin caused by fungus belonging to either Trichophyton sp. or Microsporum sp. and associated with the development of circumscribed, scabby, or crusty lesions, either bald or showing stumps of broken-off hairs. The disease spreads rapidly through a stable and may infect all animals in the string. Colts and yearlings are the most susceptible but animals of all ages may become infected. Animals become infected by contact with infected animals or by use of contaminated grooming tools, harness, blankets, or jockey boots.

Fig. 1—Girth itch on the left thorax and shoulder of a stallion.

SYMPTOMS

The initial site of infection in race horses is usually where the skin is abraded. The back, flanks, and croup, where the saddle and saddle girth rub, are the most common sites. Infection may spread and include the head, neck, and legs. Slight roughness of the hair and nodules on the skin are the first indications of infection. The skin becomes desquamated and forms small, greyish scales. Manifestation of the infection may occur in one of three forms. In the superficial form, there is a large area involved where the skin erupts and soon turns into large, thick crusts. There is no damage to the hair follicles, but the hair may break off level with the skin. The deeper form is associated with inflammation of the hair follicle. The hair may come out, leaving small hairless areas; however, the hair follicles are not destroyed and are capable of producing new hair when the condition is alleviated. The areas are smaller than those of the superficial type but are deeper into the tissue, reaching sensitive layers of the skin and producing itching which leads to the track term "girth itch." Both forms may occur on the same animal, producing large superficial lesions with thick crusts and severe itching. These areas spread at the margin

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and may coalesce, forming extensive lesions. Secondary infections often occur causing the lesions to become moist, reddened, and covered with exudate. Disfiguration may result in extensive lesions.

DIAGNOSIS

Diagnosis of ringworm infection may be achieved by one of three methods:

1) A darkened stable may be used as a darkroom where the horse is examined, using a short-wave ultraviolet lamp with a Wood's filter. A yellowish green fluorescence is characteristic of fungus infection. Scrapings of the hair and crusts may be examined, using the lamp. Scrapings should be taken from fresh lesions which have received no medication, inasmuch as many compounds have fluorescing properties.

2) Skin scrapings or hairs may be examined for the presence of fungus spores. A rapid method is to place the material on a slide and wet it with 10 per cent sodium hydroxide. A coverglass is added, the slide is gently heated and examined under low power of a miscroscope.

3) A more accurate method is to place the material on a slide previously smeared with Mayer's glycerin-albumin and allow it to dry.[1] Immerse for one minute in 95 per cent alcohol and then two minutes in 5 per cent aqueous solution of periodic acid. The material is stained in basic fuchsin for two minutes and rinsed briefly in tap water. Immerse for ten minutes in a mixture of zinc hydrosulfite and tartaric acid and then rinse. After mounting in glycerin, the material is examined under the low power of a microscope.

Hair or scrapings may be collected and placed between two sterile slides and wrapped in sterile paper. Allow the material to dry for five to ten days, to inactivate bacteria, and inoculate on Sabouraud's glucose agar and maintain at room temperature. Characteristics of the colonies after a month's growth may be used to determine the species involved.

ETIOLOGY

In recent years, many fungus infections with various skin manifestations have been found in man.[2] Many cases of animal infections in which dermatoses originated from fungus infections have been reported. Fungus infections have been found in all species of animals, especially horses, cattle, dogs, and cats. The classification and terminology of pathogenic fungi is confused. Many terms are used for the same fungus because it may be expressed according to morphological characteristics, cultural characteristics, or the pathological changes produced in the host animal.

There are two genera of fungus which may be involved in ringworm of horses.[3-5] Trichophyton, which are pathogenic to animals, have the hyphae and spores on the outside of the hair shaft and the spores occur in chains. *Trichophyton equinum* have large spores (5 to 8 μ) and produce

Fig. 2—Ringworm on the left shoulder of a filly.

a thick growth of down on culture mediums. *Trichophyton granulosum* have small spores (3 μ) and produce large colonies on culture which exhibit pleomorphism. *Microsporum equinum* produce polyhedral spores arranged in a mosaic fashion around the hair follicle. In culture, there is a branching of the fibers, many chlamydospores and closterospores, but no aleurospores.

EXPERIMENTAL

To find a safe and effective control for girth itch, N-trichloromethylthio-tetrahydrophthalimide was chosen for experimental application. This compound was chosen because of its low toxicity and high fungicidal activity. The $L.d._{50}$ of the technical material was reported[6] to be approximately 9 Gm. per kilogram of body weight after a single oral dose to the rat and 2 Gm./kg. to the rabbit after a single oral dose. In the laboratory, it completely inhibited *Microsporum audouini* in dilutions up to 1:12,500 and efficiently inhibited *Trichophyton mentagrophytes* at the same dilutions.[7] A formulation of 45 per cent N-trichloromethylthio-tetrahydrophthalimide and a cleansing agent was supplied to trainers at a New Jersey track under the code number ortho HL 614. ®* The horses were examined with an ultraviolet light and scrapings were made to determine etiology. Scrapings of the lesions contained spores resembling both *T. equinum* and *M. equinum*. Routine checks were made of the horses during medication until recovery.

CASE REPORTS

Case 1, Stable of 18 Horses.—At the beginning of the study, a stallion had extensive lesions of girth itch on his left thorax and shoulder (fig. 1). The largest was about 6 inches in diameter and had open cracks in the crusty scab. A filly had approximately 50 hairless areas, each about the size of a dime, on the left side on the shoulder and neck (fig. 2).

After each race or workout, the horses were washed with a solution containing 2 oz. of ortho HL 614 in 12 qt. of water, using a sponge or soft brush, then walked until cooled. All tack was scrubbed with the same solution, using a stiff brush. During the first two days of medication, the stallion rubbed the large lesion some, but after the second day there was no noticeable discomfort. After fourteen days of medication, hair was growing back in the lesions on both horses. There were no new cases in the other 16 horses in the stable after instigating the use of this material.

Case 2, Stable of 15 Horses and 1 Cow Pony.—A cow pony was brought in to lead horses to the post and to exercise. About a week later, 4 horses developed girth itch on their left sides. Examination revealed that the pony had lesions of girth itch on its right hip, which contacted the left shoulders and flanks of horses it led. All horses in the stable were washed with a solution containing 2 oz. of ortho HL 614 in 12 qt. of water, and then cooled. All tack was scrubbed with the same solution, using a stiff brush. After the first application, the spread of girth itch was halted and no new cases developed. Hair began growing back, in approximately

*This product is now available as ortho tack wash, California Spray-Chemical Corporation, Richmond, Calif.

Fig. 3—Girth itch on the shoulder, flank, and back of a filly.

seven days, on the horses and cow pony.

Case 3, Stable of 20 Horses.—A filly had lesions of girth itch on her shoulder, back, and flank (fig. 3). All of the horses in the stable were washed with a solution containing 2 oz. of ortho HL 614 in 12 qt. of water, and then walked until cooled. All tack was washed in the same solution. After ten days the lesions were healed, and after eighteen days hair was growing back on the bald areas. No new cases developed following the initial application.

Ortho HL 614 was used on 141 Thoroughbred race horses for nine to twenty-eight days. There were no indications of skin sensitization or adverse reaction following the application of this compound. In all active cases of girth itch, the spread of the fungus was arrested and successful healing ensued. There were no new cases in animals washed daily with the medicant, even though they were in contact with infected animals and surroundings.

SUMMARY

Ringworm of horses or "girth itch" is an infectious disease caused by fungus belonging to Trichophyton sp. or Microsporum sp. The usual manifestation is thick crusts, loss of hair, and itching. Successful healing followed the application of N-trichloromethylthio-tetrahydrophthalimide.

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Trichinae in Garbage-Fed Hogs

The infection of farm-raised hogs with trichinae is much lower than fifteen years ago but the incidence has changed little in garbage-fed hogs. When examined by the digestion technique, trichinae were found in only 19 (0.16%) of 3,000 farm hogs and in 149 (11.2%) of 1,300 garbage-fed hogs. By direct microscopic inspection no trichinae were found in the farm hogs, but they were found in 64 of the garbage-fed hogs. The maximum number of trichinae in farm hogs was 8 per gram of diaphragmatic muscle; in garbage-fed hogs, 2,700 per gram.—*Rep., Chief, B.A.I., 1952.*

Viability of Hog Cholera Virus

An outbreak of swine fever in Australia in 1942 was completely eradicated within five months by slaughtering and burning all pigs on infected farms. Forty-eight outbreaks were diagnosed.

Frozen pork held at 12 F., from pigs killed in the incipient stages, has yielded virus which had remained viable for 1,598 days. Bacon prepared from pigs in the incipient stage was capable of setting up infection after twenty-seven days but not after fifty-seven days.

Repeated exposures of susceptible pigs indicated that the infection did not persist on premises for an extended period. Pigs became infected twenty-four hours after infected pigs had been removed but not after forty-eight hours.—*Vet. Bull., Nov., 1952.*

Swine Population of World

The Foreign Agricultural Service of the U.S.D.A. estimates that there will be 301,000,000 swine in the world in 1953 as compared to 307,000,000 a year ago. This 2 per cent decrease is the first since 1946 and results chiefly from reductions in North America. The number is still 4 per cent above the average of 1936-1940. In 1952, North America was first with 80,000,000 swine. Exclusive of Russia, Asia was second with 78,000,000 and Europe third with 77,000,000. South America was fourth with 38,000,000. In 1953, North America will be third with 71,000,000 swine.—*The Cattleman, June, 1953.*

Experimental Vesicular Exanthema in the Dog

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ONE OF THE important drawbacks in the study of vesicular exanthema (VE) of swine is that the virus has been found to be infectious with regularity for swine only, making experimentation difficult, slow, and costly. During the search for another suitable host for this virus, dogs were occasionally available and were included in the trials. The observations in dogs are believed to be of sufficient interest to report.

Galloway and Höve[1,2] found both cats and dogs susceptible to inoculation with foot-and-mouth disease virus and that the disease was transmitted by contact from one animal to another of the same species. Hutyra, Marek, and Manninger[3] also refer to the susceptibility of dogs to infection with foot-and-mouth disease under natural conditions; however, according to Gins and Krauser,[4] a number of workers were unable to transmit the disease to dogs experimentally. Vesicular stomatitis in dogs has been suspected under natural conditions in two outbreaks of the disease in the United States,[5,6] but the infection was not proved by laboratory methods. Kowalczyk,[7] working with a strain of vesicular stomatitis virus isolated in the Wisconsin outbreak, failed to transmit the disease experimentally to 3 young and 3 mature dogs, but demonstrated the presence of virus-neutralizing antibodies following inoculation by the intravenous, intracerebral, and intradermal routes, respectively.

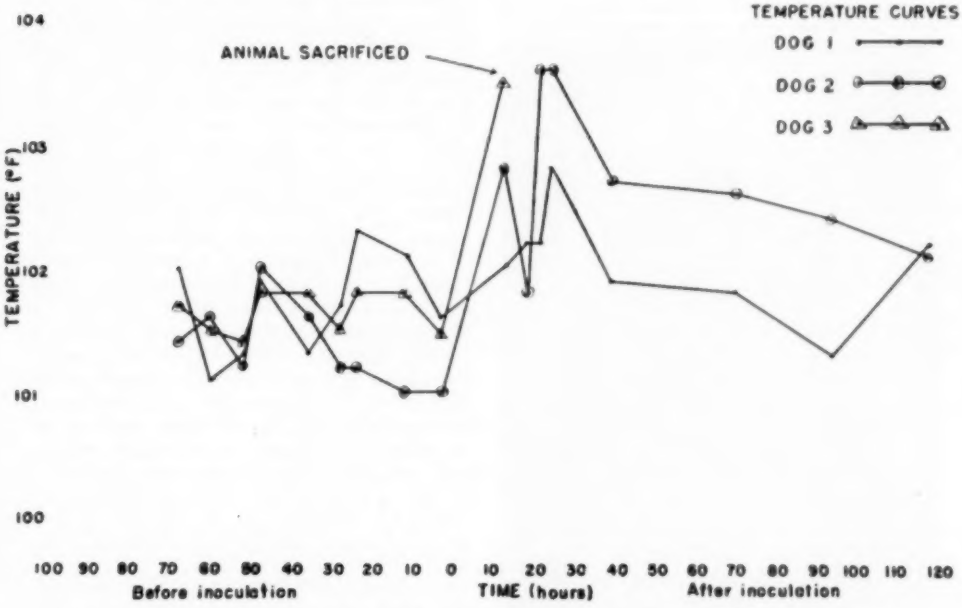

Fig. 1—Thermal reactions of the 3 dogs of the second experiment. Dogs 2 and 3 were inoculated with type B vesicular exanthema virus; dog 1 was the uninoculated control.

There is no available data relative to the susceptibility of dogs to VE virus; however, it was learned that a condition simu-

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lating this disease in this animal species was noted by Dr. C. W. Julian, a veterinarian with the Bureau of Livestock Disease Control of the California State Division of Animal Industry. During a severe outbreak of VE on a hog ranch in 1947 in California, a Shepherd stock dog was used for working these infected pigs and was constantly in contact with the sick animals. The dog developed a severe lameness in both front feet and one hind foot. The two front paws showed well-marked lesions indistinguishable from typical VE vesicles in hogs. The vesicles occurred around and between the claws, with loosening of the pads which were well marked. The lameness lasted for four to five days after which the vesicles healed rapidly. No attempt, however, was made to ascertain whether the primary cause for this condition was VE virus.

MATERIALS AND METHODS

Three immunologically distinct types of vesicular exanthema virus were employed. Type F was obtained in 1948 by Dr. J. Traum from an outbreak on a ranch in southern California. The other two viruses were isolated during 1952 from outbreaks in the northern part of California and were designated as types A and B, respectively, after finding that they were immunologically distinct from type F virus and from each other by cross immunity tests in swine and by the complement-fixation test.[10]

Virus suspensions for inoculation were prepared from fresh, unruptured vesicles of snouts of swine previously inoculated intradermally into the skin of the snout. The vesicles were ground in a cold mortar with alundum and enough buffered saline (pH 7.4) to make a 10 per cent suspension. The latter were centrifuged at 2,500 r.p.m. for fifteen minutes and the supernatant fluid used as the inoculum. In all cases, the infectivity of the inoculums employed were tested in susceptible swine. The interdermal-lingual (i.d.l.) injections and scarification inoculations in dogs were made under halatal anesthesia.

The dogs used in the experiments were obtained from sources which precluded a history of their previous environments. The animals were placed in a unit two weeks before the experiment was begun for observation for disease or abnormalities prior to inoculation. All work with the infectious agents was done within well-isolated quarters of a building especially constructed for the study of this disease. Control i.d.l. inoculations were made on dogs outside of the compound, and the sites at which inoculations were made, with the sterile diluent used for the virus suspension, could be detected only with great difficulty, or not at all, the following day.

Fig. 2—Tongue of dog 3. This dog was killed sixteen hours following inoculation and showed erosions of the epithelium at points of inoculation.

RESULTS

First Trial.—An adult, mixed Shepherd female was inoculated with type F VE virus. Another dog, an adult male, similar in size and breeding was inoculated with type B VE virus. The injections were given i.d.l. on the right side of the tongue and the virus scarified into the epithelium on the left side. Within twenty-four hours, mild fever was noted in both animals, 103.6 and 104.4 F., respectively. The lesions at points of the i.d.l. inoculations appeared as erosions 8 to 10 mm. in diameter, with a red base but with no apparent blanching around the periphery of the erosion to indicate an extension of the lesions. There were no gross changes of the tissues about the scarified areas. Although the erosions were devoid of lifted epithelium and were not typical of early vesicles found on the snouts of hogs or tongues of cattle injected with viruses of vesicular exanthema or foot-and-mouth disease, the lesions were similar to the type found and adequately described in a horse inoculated with VE virus.[8,9] The temperatures receded by the forty-eighth hour and remained normal during the

following four days. The lesions healed rapidly.

Second Trial.—The experiment was repeated with type B virus, employing 3 adult working dogs of mixed breeds, each weighing about 25 lb. All 3 animals were anesthesized. Dog 1 was held as a control, and dogs 2 and 3 were inoculated in the same manner as those in the previous experiment. Body temperatures were taken and hematological studies of the peripheral blood were made at approximately eight-hour intervals, beginning three days before inoculation and continuing until the termination of the experiment.

As shown in figure 1, a slight rise in temperature was noted in dog 3 thirteen hours following injection, but the lower temperature of dog 2 may have been due to the fact that the animal was still under the influence of anesthesia. At that time, a slight reddening was visible at the sites of injections in both animals. Observation on the sixteenth hour revealed erosions 5 to 8 mm. in diameter, with a red base denuded of epithelium at the points of inoculation with no apparent blanching at the margins. The scarified area showed a slight denudation of epithelium along the lines of scarification but did not appear vesicular (fig. 2). At this time, dog 3 was killed with halatal and the spleen removed for virus isolation. The organ was frozen at −15 F., cut into small pieces with scissors, and ground in a colloidal mill (model QV6) with a sufficient amount of buffered saline (pH 7.4) to make a 10 per cent suspension. The latter was centrifuged at 3,000 r.p.m. for twenty minutes and the middle layer removed as the inoculum. The suspension, inoculated i.d.l. into the snout of 2 pigs, produced typical vesicles and other symptoms of vesicular exanthema.

Twenty-four hours after inoculation, dog 2 showed a slight rise in temperature which receded to the normal range by the thirty-ninth hour. At about the same time, there was extreme salivation and a distinct blanching surrounding the area of inoculation which became more pronounced. There was an extension of the erosions which coalesced to form one large lesion 18 mm. by 5 mm. A similar erosion, with blanching and extension of the lesion, was noted along the lines of scarification. By the third day, no further extension of the lesion was apparent. The animal was killed on the fifth day (fig. 3).

Hematological studies of the peripheral blood of the 3 dogs of the second experiment did not reveal any marked changes between the control and the infected animals in red blood cell count, white blood cell count, differential count, or sedimentation rate.

Third and Fourth Trials.—Two additional trials of two groups of 2 dogs each were conducted, using types B and A vesicular exanthema viruses, respectively. Although each of the inoculums produced a severe reaction in susceptible swine, none of the 4 dogs inoculated developed a rise in temperature above the normal range (102.5 F.). One of the dogs inoculated with type B virus showed no evidence of an infection during the ten-day observation period; however, the second dog presented two erosions, 2 to 3 mm. in diameter, surrounded by a fringe of distinctly blanched

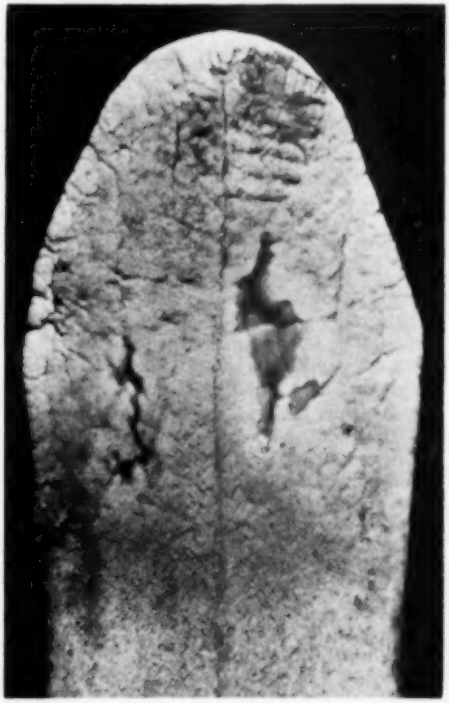

Fig. 3—Tongue of dog 2, showing healing erosions about intradermal-lingual inoculations (right) and scarified area (left) five days following inoculation.

epithelium on the periphery twenty-four hours following inoculation. The animal was killed, but a suspension prepared from the spleen proved to be innocuous to susceptible swine.

The second group of 2 dogs, inoculated with type A virus, presented erosions 3 to 4 mm. in diameter, surrounded by a fringe of blanched epithelium, which were evident twenty-four hours following inoculation in 1 animal and appeared when examined on the forty-eighth hour in its pen mate. In the latter, the lesions showed a slight extension on the third day which did not progress in size or severity thereafter. The former animal was killed on the twenty-fourth hour, but the virus could not be re-isolated from the spleen.

SUMMARY

Dogs exposed by intradermal-lingual injections were found to be irregularly susceptible to three immunologically distinct types of vesicular exanthema virus (types A, B, and F). The lesions at the points of inoculation were mild, characterized by erosion of epithelium, blanching, and extension. They were often accompanied by a slight rise in temperature. The virus was recovered sixteen hours following inoculation intradermal-lingually from the spleen of a dog showing a fever but was not re-isolated from 2 afebrile animals.

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Diabetes Mellitus in a Cat

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On Aug. 16, 1952, a castrated male cat, 9 years of age, was presented for examination. The owner related that the cat had been losing weight for about a month and now was quite emaciated. His appetite however, remained very good. The owner also reported that the cat had been drinking more water than usual and was voiding urine frequently.

The temperature was 101.8 F. and other physical findings were negative. On the basis of the typical anamnesis, a tentative diagnosis of diabetes mellitus was made. The cat was hospitalized and a specimen of urine, obtained by catheterization, was sent to a commercial laboratory. The results of the urinalysis were as follows: color, amber; transparency, clear; odor, aromatic; sediment, small; specific gravity, 1.055;* reaction, acid (pH 6); albumin, negative; sugar, 4 plus;* acetone, 4 plus;* diacetic acid, negative; occult blood, positive;* erythrocytes per high power field (h.p.f.), uncountable;* leukocytes per h.p.f., uncountable;* epithelial cells, 2 to 3 per h.p.f.

The blood in the urine could easily have been the result of trauma due to catheterization. The very high specific gravity, plus the large amounts of sugar and acetone confirmed the diagnosis of diabetes mellitus. Euthanasia was recommended but the owner insisted on treatment. On August 21, after reading articles on the disease in man and getting advice on how to start insulin treatment, 1 unit of protomine zinc insulin was injected subcutaneously and repeated on the two successive days. Because of difficulty in measuring such a small quantity of insulin, the dosage was increased to 2 units a day. On August 29, a urine specimen was obtained and tested for sugar only; it reacted 3 plus. This and

*Abnormal value.

Dr. Dlugach is a practitioner in Philadelphia.

all subsequent tests were performed in the hospital. The dosage of insulin was then increased to 4 units per day and on August 31, to 5 units. A urine specimen on September 2, reacted 2 plus for sugar.

The cat was then sent home and the owner instructed to continue the daily injection of 5 units of protomine zinc insulin each morning. On September 8, the cat was returned and its urine was still 2 plus for sugar. Clinical improvement was now evident as the cat had gained weight and was more active. The owner was instructed to increase the insulin to 10 units per day. On September 13, the cat's urine tested 2 plus for sugar and considerable clinical improvement had occurred. The insulin was increased to 15 units daily.

On September 15, the cat was returned with a report that it had had an "attack" the day before. It had diarrhea and seemed to be dizzy and was either unable or disinclined to stand. The owner had placed half a teaspoonful of sugar in the cat's mouth, after which recovery occurred in twenty minutes, and had injected only 12 units of insulin. A urine specimen taken at 8:00 p.m. reacted 2 plus for sugar. The owner was advised to administer 14 units of insulin until further notice. On September 19, the cat was doing well and was almost back to normal weight. The urine reacted negative for sugar for the first time. The owner was instructed to continue a maintenance dose of 14 units of insulin, and the case was considered ended.

On October 3, the cat was again returned with a report that there had been almost daily mild attacks of hypoglycemia, as evidenced by vertigo occurring about six to seven hours after the injection. The urine was still negative for sugar, so the dose of protomine zinc insulin was reduced to 13 units and the owner instructed to report daily by phone. The next day, the usual attack was reported so the dose was cut to 12 units. From October 4 to 11, no further attacks of vertigo had occurred and the urine was negative for sugar. On October 13, the owner reported another mild attack and the dose was cut to 11 units. No further attacks have been reported in the past four months.

While in the hospital, a close watch was kept on the cat's stools for signs of pancreatitis, but none were observed.

Tetanus in Dogs—A Case Report

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True tetanus is rarely seen in the canine species; at least it is rarely reported in the literature.

Since a colleague called my attention to a case five years ago, the following 4 cases have been presented at my hospital. All, upon presentation, had the classically described symptoms. The commissures of

Fig. 1—Note the extreme rigidity of the tail of this Beagle (case 2).

the lips were drawn back, giving a severe angulation to the mouth and a drawn look to the face. The ears of the 2 German Shepherds were rigidly erect, while the Beagle and the Pug showed a decided arching at the base of the ear. The sawhorse attitude with general body stiffness was most typically present in the Beagle hound, but the accompanying stiff gait was prominent in all cases. Actually, if the dogs were lifted a few inches off the table and dropped, they would bounce.

While a high temperature is not considered a sign of this disease, 3 of the dogs had temperatures of 103 to 104 F. throughout their illness. The period of illness varied from ten to sixteen days, during which time the described symptoms were constantly present. The typical lockjaw attitude was always present; however, all

Dr. Ripps is a practitioner in Asbury Park, N. J.

were able to take nourishment by mouth, but with considerable difficulty. And, as is classically described, the nictitating membrane protruded, although the degree of protrusion was not the same in all cases.

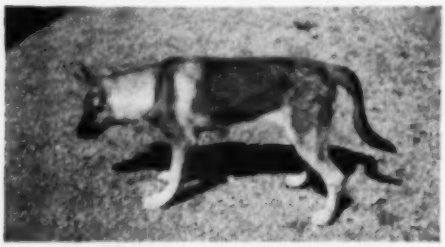

Fig. 2—This German Shepherd (case 4) showed typical symptoms of tetanus.

Case 1.—In August, 1949, a 9-month-old male German Shepherd was presented ten days after cutting his paw while running in a field. Tetanus antitoxin was given as follows: twenty-four hours after admission, 50,000 units intraspinally (through the cisterna magna) and 50,000 units intravenously, plus another 25,000 units intravenously the next day. In addition, 15 gr. of chloral hydrate was given in a capsule *per rectum* four times daily and 300,000 units of penicillin intramuscularly daily for ten days. The animal was given saline and glucose solutions intravenously the first three days. Recovery was uneventful in ten days.

Case 2.—A 4-month-old male Beagle (fig. 1) was presented in September, 1949, seventy-two hours after the owner suspected something was wrong. His symptoms were more pronounced than the other cases and he was definitely more rigid throughout the body but his temperature remained normal. This was the only case to show extreme hyperexcitability. He was given two doses of 300,000 units, of penicillin intramuscularly, but died forty-eight hours after admission.

Case 3.—A 3-year-old male Pug was presented in July, 1950, with no history, three weeks after arrival in this state. Tetanus antitoxin was given intravenously at the rate of 50,000 units the first day and 25,000 units the second. Tubadil,* a preparation of curare in oil, was given every other day at the rate of 1 cc./100 lb. of body weight. For this 20-lb. animal, the actual dose was 4 mg. of d-tubocurarine chloride per injection. In my opinion, curare apparently is an asset in treating any disease with muscle (skeletal) spasms. This case, and the next one described, actually appeared to eat normally at the height of the relaxation produced by the curare. This patient also received 300,000 units daily of penicillin intramuscularly for fourteen days and was discharged on the sixteenth day. A communication from the owner one month later revealed the animal to be in perfect condition.

Case 4.—In September, 1952, a 4-month-old male German Shepherd, which had been presented eight days previously with a severe laceration on the inside of the right cheek, now showed typical symptoms of tetanus (fig. 2). He was given 50,000 units of tetanus antitoxin intraspinally and 50,000 units intravenously the first day and another 50,000 units intravenously the second day. A 300,000-unit daily dosage of penicillin was administered, as in case 3, along with tubadil injections at the rate of 8 mg. d-tubocurarine chloride per injection every other day Recovery was complete in eleven days.

Conclusions.—(1) In certain areas, canine tetanus may not be rare but it may go undetected. In this area, there are a number of transient horses which perhaps provide the reservoir of infection for these cases.

2) The administration of tetanus antitoxin intraspinally and intravenously is of some aid in the treatment and apparently does help to shorten the course of illness. However, for maximum advantage it must be administered at the onset of the disease, since it appears to have little effect if used after the disease has progressed a few days. The cost of this serum in therapeutic dosage, unfortunately, can be prohibitive.

3) Curare, or any similar skeletal muscle relaxant, has great value in treating this disease. Some difficulty can be experienced if the curare is not administered according to the recommended dosage.

4) While a history of a puncture wound may precede a case of tetanus, such are not always apparent. As with horses, there are probably many cases of idiopathic tetanus in dogs.

*Produced by Endo Product, Inc., Richmond Hill, N.Y.

The Application of a Suggested Method for Differentiating Vaccinal and Infection Titers in Cattle Known to Be Infected with *Brucella Abortus*

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B. H. EDGINGTON, D.V.M.

Wooster, Ohio

A METHOD FOR differentiating between vaccinal and infection titers of *Brucella abortus* in cattle was suggested by Dick, Venzke, and York.[2] These workers reported that any animal not stimulated to the production of Brucella agglutinins by the intramuscular injection of 5 ml. of strain 19 vaccine within a maximum of fifteen to seventeen days was an infected animal. Animals exhibiting any blood serum titer increase following injection of strain 19 vaccine was classified as noninfected and it was suggested that these animals possessed titers due to previous vaccination. Venzke[7,8] has made additional reports on the use of this diagnostic test. Barner, Oberst, and Atkeson[1] administered *Br. abortus* strain 19 vaccine to vaccinated cattle exhibiting varying serological reactions, known infected cattle, and known infected cattle previously vaccinated as adults. These workers concluded that the anamnestic reaction was of value (as a diagnostic measure) in differentiating between vaccinal and infection titers.

It was the purpose of the present study to expand the observations under experimental conditions and to determine the efficacy and the practicability of this diagnostic test.

MATERIALS AND METHODS

In general, the methods outlined by Dick *et al.*[2] were followed. The serum titer was determined by the serial dilution tube test method rather than the rapid plate agglutination test, since it was believed that the latter did not show as reliable maximal titers, especially in the high dilutions. Titers were determined on all animals at least twice, approximately two weeks apart. If titers were stationary or declining, the animals were injected with 5 ml. of *Br. abortus* vaccine (BAI strain 19) subcutaneously. The animals were bled approximately two weeks following the test injection of the vaccine, and the titers compared with the prevaccination determinations.

Those animals which showed a rising titer when the herd testing was completed were dropped from the experiment, since it was one of the premises that the test would be of significance only on animals exhibiting stationary or receding titers. Obviously, animals of negative status (showing no agglutinin titer at 1:50) could not be included.

The maximal titer was assigned to the highest dilution giving a complete reaction or to the next higher dilution provided it showed an incomplete agglutination.

For the purpose of this investigation and in accordance with data presented by Dick *et al.*[2] and Barner *et al.*,[1] a significant rise in titer was defined as an increase of at least one complete dilution. Less than one complete dilution increase was considered as not significant.

At all prevaccination bleedings, quarter milk samples were cultured for *Br. abortus*. A tryptose (Difco), penicillin, sodium azide agar, enriched with thiamine hydrochloride was used.

Ten herds, totaling 152 cattle, were studied. Of this number, 45 were found to be shedding *Br. abortus* in their milk and were designated as infected animals.

RESULTS

When the differential test was applied to the 45 known infected animals, it was found that the agglutinin titers increased at least one complete dilution in 27 (60%) of the animals injected with the test injection of strain 19 vaccine. Therefore, if the correct interpretation of this test has been applied, 60 per cent of these known infected animals would be considered carrying titers due to vaccination rather than to infection. A summary of dilution changes for the group of infected cattle is shown in table 1.

The mean number of dilutions changed was 0.73 and the standard deviation around this mean was 1.1. Statistical analysis revealed that there was a highly significant difference ($P<0.01$) between the blood serum-agglutinin titer dilution change of these infected cattle before and after injection with strain 19 vaccine.

From the Veterinary Science Department of the Ohio Agricultural Experiment Station, Wooster, in cooperation with the Department of Veterinary Medicine in the College of Veterinary Medicine, the Ohio State University, Columbus.

Table 2 shows the results when this differential test was used on a group of experimentally infected cattle, a part of the 45 head previously mentioned. This infected herd was comprised of 8 head vaccinated with Huddleson's mucoid vaccine (M), 1 strain 19 vaccinate, and 7 nonvaccinated controls. The vaccinates were injected with the two types of vaccine approximately twelve months prior to the experimental exposure. The test vaccine (strain 19) was used seven months following the experimental exposure (BAI, strain 2308). Nine of the 16 infected animals exhibited a rise in serum-agglutinin titer of at least one complete dilution following the injection of the test vaccine. Of the 9 animals exhibiting an increase in titer, 5 were (M) vaccinates, and 4 were controls. Titers of 2 of the infected (M) vaccinates (6 and 17) rose one dilution, 2 (23 and 36) rose two dilutions, and 1 (24) rose three dilutions. There was a titer rise of one dilution in each of 3 controls (21, 22, and 25), and a rise of four dilutions in 1 control (39). All of the animals injected had stationary or declining titers for two pretest bleedings twenty days apart. If the procedure for conducting this test is applied as specified by the original authors, then 9 of 16 (56.25%) of these infected animals would be classified incorrectly as vaccinates; whereas 7 (43.75%) would be diagnosed correctly as possessing agglutinins due to infection.

Table 3 shows the fluctuations of agglutinin titers of nonvaccinated cattle known to be infected with *Br. abortus*. These animals were artificially exposed to virulent *Br. abortus* at approximately 5 to 6 months in gestation. Maximal titers were reached approximately two or three months following exposure. A slow receding, fluctuating, agglutinin titer was observed for many months following abortion or calving.

TABLE 1—Changes in Agglutination Titer Following Vaccination of Infected Cattle with Brucella Abortus Strain 19

No. of dilutions changed	No. cattle in group	Total No. of dilutions changed
4	1	4
3	1	3
2	7	14
1	18	18
0	12	0
—1	6	—6
Totals	45	33

TABLE 2—Application of Differentiation Test on Cattle Experimentally Infected with Brucella Abortus

Cow (No.)	Titer 4-3-52	Titer 4-17-52	Titer 4-29-52	Titer 5-14-52	Titer 6-3-52	Injected str. 19 vac.	Titer 6-14-52	Previous history	Tissue from which Br. abortus isolated	Classification according to differential test
1	I 3,200	I 3,200	I 3,200	I 3,200	I 1,600	6-3-52	I 1,600	M (i.v.)	F, MK, Vs.	Infected
6	I 1,600	I 1,600	I 800	I 400	I 400	6-3-52	I 800	M (s.)	MK, Vs.	Vaccinated
8	I 6,400	I 6,400	I 3,200	I 3,200	I 1,600	6-3-52	I 1,600	M (i.v.)	MK, Vs.	Infected
13	I 6,400	I 6,400	I 6,400	I 6,400	I 6,400	6-3-52	I 6,400	Control	F, MK, Vs.	Infected
15	I 12,800	I 6,400	I 6,400	I 12,800	I 12,800	6-3-52	I 12,800	M (s.)	MK, Vs.	Infected
16	I 6,400	I 6,400	I 3,200	I 3,200	I 1,600	6-3-52	I 1,600	Control	MK, Vs.	Infected
17	I 1,600	I 800	I 800	I 800	I 800	6-3-52	I 1,600	M (s.)	MK, Vs.	Vaccinated
21	C 3,200	I 1,600	I 3,200	I 3,200	I 1,600	6-3-52	C 3,200	Control	MK, Vs.	Vaccinated
22	I 6,400	I 6,400	I 6,400	I 6,400	I 3,200	6-3-52	I 6,400	Control	B, F, MK, Vs.	Vaccinated
23	I 6,400	I 6,400	I 3,200	I 6,400	I 1,600	6-3-52	I 6,400	M (s.)	MK, Vs.	Vaccinated
24	I 800	I 800	I 400	I 800	I 200	6-3-52	I 1,600	M (s.)	F, MK, Vs.	Vaccinated
25	I 3,200	I 1,600	C 1,600	I 1,600	I 1,600	6-3-52	C 3,200	Control	F, MK, Vs.	Vaccinated
31	I 6,400	I 6,400	I 3,200	I 3,200	I 3,200	6-3-52	I 3,200	Control	F, MK, Vs.	Infected
35	I 3,200	I 1,600	I 3,200	I 6,400	I 6,400	6-3-52	I 6,400	Str. 19	MK, Vs.	Infected
36	I 200	I 200	I 50	I 100	I 50	6-3-52	I 200	M (s.)	MK, Vs.	Vaccinated
39	I 200	I 400	I 200	I 100	I 100	6-3-52	I 1,600	Control	B, F, MK, Vs.	Vaccinated

All animals were exposed with BAI strain 2308 on Nov. 1, 1951. C = complete reaction; I = incomplete reaction; M = Huddleson's mucoid vaccine; B = blood; F = fetus; MK = milk; s = subcutaneous i.v. = intravenous; Vs. = vaginal swab Control = nonvaccinated.

TABLE 3—Fluctuations of Agglutinin Titers of Nonvaccinated Cattle Experimentally Infected with Brucella Abortus

Cow (No.)	Exposed with BAI strain 2308	Postexposure titers															
		10-27-49	11-19-49	12-20-49	1-19-50	3-7-50	3-28-50										
1	10-6-49	I 100	I 3,200	C 12,800	I 12,800	I 12,800	I 3,200	—	—	—	—	—	—	—	—	—	—
2	10-6-49	I 25	I 200	I 3,200	I 3,200	I 6,400	I 3,200	—	—	—	—	—	—	—	—	—	—
3	10-6-49	I 200	I 800	I 12,800	I 12,800	I 6,400	I 6,400	—	—	—	—	—	—	—	—	—	—
4	10-6-49	I 25	I 50	C 1,600	C 1,600	I 6,400	I 12,800	—	—	—	—	—	—	—	—	—	—
8	10-6-49	I 100	I 200	C 12,800	C 12,800	C 12,800	C 12,800	—	—	—	—	—	—	—	—	—	—
		11-16-51	11-29-51	12-13-51	12-28-51	1-11-52	1-23-52	2-7-52	2-8-52	4-29-52	5-23-52						
9	11-1-51	I 50	I 200	I 1,600	I 1,600	I 6,400	C 6,400	C 12,800	—	—	—						
10	11-1-51	I 25	I 400	I 400	I 100	I 800	C 800	I 1,600	—	—	—						
13	11-1-51	I 200	C 800	I 800	I 3,200	I 6,400	I 3,200	I 3,200	I 1,600	I 6,400	I 6,400						
16	11-1-51	—	I 100	I 200	I 400	I 1,600	I 800	I 800	I 3,200	I 1,600	I 1,600						
18	11-1-51	I 100	I 400	I 3,200	I 3,200	I 12,800	I 12,800	C 12,800	—	—	—						
21	11-1-51	I 25	I 400	I 800	I 3,200	I 12,800	I 6,400	I 6,400	I 3,200	I 800	I 1,600						
22	11-1-51	I 50	I 1,600	I 1,600	C 6,400	I 12,800	I 12,800	I 12,800	I 12,800	I 6,400	I 3,200						
25	11-1-51	I 50	I 800	I 800	I 3,200	I 12,800	C 6,400	I 6,400	I 3,200	I 1,600	I 1,600						
31	11-1-51	I 50	I 200	I 200	I 800	I 1,600	I 3,200	I 6,400	I 6,400	I 3,200	I 3,200						
39	11-1-51	I 200	I 800	I 400	I 1,600	I 1,600	C 800	I 800	I 400	I 200	I 100						

I = incomplete agglutination; C = complete agglutination; — = no sample.

The titer response of calves vaccinated with strain 19 is shown in table 4. When these unexposed calves were vaccinated subcutaneously with strain 19 vaccine, the maximal agglutinin production occurred approximately seven to fourteen days following injection. Without active virulent infection, their titers receded rather rapidly and fluctuated around 1:50 or 1:100 for several months. All of these calves exhibited titers fluctuating one dilution or more around 1:50 or 1:100 as late as twelve months following vaccination.

Discussion

Titers of both infected animals and those vaccinated with strain 19 tend to fluctuate considerably, especially after peak titers have been reached. Temporary increases of one to two complete dilutions in unexposed strain 19 vaccinates and in infected animals without intentional reëxposure have been observed when tested at semimonthly and monthly intervals.

Similar observations have been reported by Metzger and Shuart.[6] These workers reported that when adult cattle previously unexposed to *Br. abortus* are vaccinated with strain 19 vaccine, the peak of agglutinin production occurred at about ten days following vaccination. The concentration of agglutinins declined rather rapidly to a titer of 1:50 or 1:100. Without superimposed infection, the titers fluctuated about this level for periods varying from several months to three or four years. When the vaccinated adults became infected with a virulent strain of organisms, either soon after or a considerable period of time following vaccination, the concentration of agglutinins increased at a rapid rate.

Edgington and Donham[3] reported that nonvaccinated heifers exposed to a virulent strain of *Br. abortus* prior to breeding and reëxposed during pregnancy showed a rise and considerable fluctuation in agglutinin titers.

Winter[9] observed that some strain 19 vaccinates which showed negative readings following vaccination would, at some later date following freshening, show marked increases in titer. These fluctuations persisted for variable periods, in some cases for as long as a year. There seemed to be no direct relationship to the period of gestation or any other known factor. Such jumps occurred and recurred at various

periods and seemed to be of little importance rather than to seriously mar the blood record.

The results of the present study indicate that a titer increase of one complete dilution is well within the limits of normal fluctuation. Data from other brucellosis studies [3-6,9] indicate that it is not uncommon to observe such a fluctuation of titer in vaccinated and infected individual animals. In view of these observations, it would appear that an increase in titer of but one complete dilution should not be considered as a significant increase in conducting a biological test of this kind.

The results in table 1 show that 60 per cent of known infected cattle exhibited a rise in titer following injection with strain 19 vaccine. These results are not in accord with the premise that infected cattle should show no rise in titer following the injection of the test vaccine.

While this and other studies[4,5,7,8] indicated that the use of the test vaccine elicits a greater average titer increase in strain 19-vaccinates than in Brucella-infected animals, nevertheless, blood serum titers of infected animals may increase following injection of strain 19 vaccine and in response to re-infection. Therefore, if it is assumed that titers of Brucella-infected animals do rise, either in response to Brucella-antigen stimulation or to normal titer fluctuation, the question immediately arises, what should be considered a diagnostic titer rise? Should less than one complete dilution be considered a rise? Should the critical point be one dilution, two dilutions, or more?

If the diagnostic rise in titer following the test vaccine injection is considered to be an increase of one complete dilution, then of the 45 head of known infected animals used in this experiment, 27 (60%) would be improperly classified by the differential test. If it is assumed that the diagnostic level should be two complete dilutions, then 9 (20%) of the infected animals would be improperly classified. Such results would be of questionable value as an aid in the control of brucellosis.

A rise in titer following the injection of the test vaccine, as defined in this study and as used in the two previous reports,[1,2] must be redefined if the test is to be of value in differentiating between vaccinal and infection titers.

TABLE 4—Fluctuations of Agglutinin Titers of Unexposed Cattle Vaccinated with Strain 19

Cow (No.)	Time of vaccination	Postvaccination Titers									
		9-20-50	10-18-50	11-17-50	12-18-50	1-18-50	2-19-50	3-10-51	4-18-51	9-18-51	11-1-51
27	8-21-50	I 3,200	I 200	I 50	I 25	I 50	I 50	I 50	I 50	I 50	I 50
28	8-21-50	I 800	I 200	I 50	I 50	I 50	I 25	I 50	I 50	I 50	—
29	8-21-50	I 800	I 100	I 25	I 50	I 100	I 25	I 25	I 50	I 50	I 50
30	8-21-50	I 800	I 100	I 100	I 50	C 50	I 50	I 50	I 25	I 50	I 50
32	8-21-50	I 800	I 100	I 25	I 100	I 50	I 50	I 50	I 50	I 25	I 25
33	8-21-50	I 3,200	I 200	I 100	I 200	C 100	I 50	I 100	I 100	I 100	I 200
35	8-21-50	I 3,200	I 200	I 100	I 50	I 100	I 50	I 100	I 50	I 50	I 100

I = incomplete agglutination; C = complete agglutination; — = no sample.

SUMMARY

1) A suggested method for differentiating between vaccinal and infection titers was applied to cattle known to be infected with *Brucella abortus*.

2) Forty-five head of known infected cattle were injected with strain 19 as a test vaccine. Agglutinin titers increased one complete dilution or more in 27 (60%) of the animals injected.

3) Agglutinin titers increased two or more complete dilutions in 9 (20%) of the animals injected.

4) If the data were to be interpreted on the basis of one dilution titer rise, as indicated by previous reports, [1,2] it would show that 60 per cent of known infected animals used in this experiment would be considered as exhibiting titers due to vaccination when the differential test was applied.

5) What should be considered a significant rise in titer following the injection of strain 19 as a test vaccine into cattle carrying titers due to infection and vaccination is discussed.

6) The results obtained in this experiment using strain 19 vaccine as a means of differentiating between titers due to vaccination and those resulting from infection indicate that the test under the present method of use is of questionable value.

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Bees Can Be Choosy

When colonies of bees were placed in adjacent fields of red clover, Ladino clover, and alfalfa, they neglected the red clover which, as a result, was not adequately pollinated. Bees even show a preference for certain varieties of alfalfa.—*U.S.D.A., Dec., 1952.*

Psittacosis Outbreak in New York

Outbreaks of psittacosis occurred in May in two communities 11 miles apart in New York State. There were three confirmed cases in each outbreak, with the possibility of additional cases. One was a typical household outbreak; the other outbreak was among employees of a chain store selling parakeets and other birds.

Both were believed traceable to parakeets placed on sale since modification of federal regulations and removal of New York State prohibitions on the traffic in psittacine birds.—*Am. J. Pub. Health, Feb., 1953.*

A Probable Case of Banti's Syndrome in a Dog

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Banti's syndrome (Banti's disease, splenic anemia, congestive splenomegaly with hypersplenism) is a disorder in man characterized by splenomegaly, anemia, leukopenia, thrombocytopenia, cirrhosis of the liver, and a tendency to gastro-esophageal hemorrhages.[1,2] The syndrome is now believed to result from a variety of causes. In general, it may be said that any condition which produces an increased pressure in the portal or splenic vein over a long period is capable of causing an identical picture.[4] A perusal of the veterinary literature failed to uncover any mention of Banti's syndrome by that or any other name.

Case Report.—A 9-year-old, 38-lb., male mongrel Terrier, which had been ailing for some time, was presented for examination and treatment. The owner supplied a history of progressive weight loss, fatigue, muscular weakness, anorexia, and malaise. Symptoms and signs observed were: rapid pulse, shallow breathing, dry, tight skin, and a marked abdominal fullness due to a huge palpable mass which literally seemed to fill the animal's abdomen, causing it to bulge perceptibly. The seemingly obvious

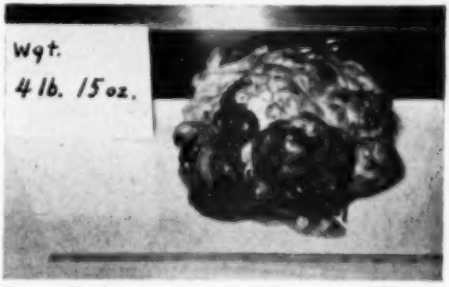

Fig. 1—The huge mass removed from the dog's abdomen, the bulk of which was an aneurysm of the splenic artery.

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The author expresses his appreciation to Drs. W. D. Bolton and J. R. Wadsworth for preparing the photographs and microslides; to Dr. R. S. Woodruff of the University of Vermont College of Medicine for making the final diagnosis; and to Mr. John Withee of the Hitchcock Foundation for taking the photomicrographs.

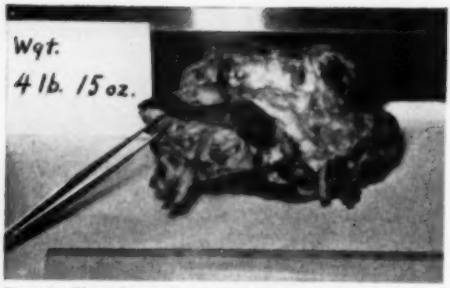

Fig. 2—This shows the relationship of the enlarged spleen and the fibrotic mass. The dark areas on the spleen are subcapsular hemorrhages.

Fig. 3—A cross section of the mass showing the aneurysm wall, thrombosis, and central cavernous area filled with reddish serum.

diagnosis of an abdominal neoplasm was made and, because the owner would not consider euthanasia, the dog was prepared for surgery. A grave prognosis was given. Unfortunately, routine blood and urine studies were not undertaken.

Parenteral amino acids, 5 per cent dextrose in saline solution, and B vitamins were administered during the twenty-four hours preceding surgery. In view of the patient's age and general condition, morphine (1/8 gr.) followed by ether inhalation was considered to be the least hazardous anesthetic regimen. Induction was smooth and the dog appeared to be well stabilized throughout the operation. After securing the patient in dorsal recumbency, a 10-in. incision through skin, muscle, and peritoneum was made parallel to the median line on the left side. This exposed a huge, circumscribed, irregular mass (fig. 1). When cautiously lifted up and out, it was noted that the spleen and mass were connected by omentum and had a common blood supply. Marked splenomegaly was evident (fig. 2). Blood vessels were ligated individually and both structures were removed. The liver which was now plainly visible was a dirty, olive green and its entire surface was peppered with nodules of varying size.

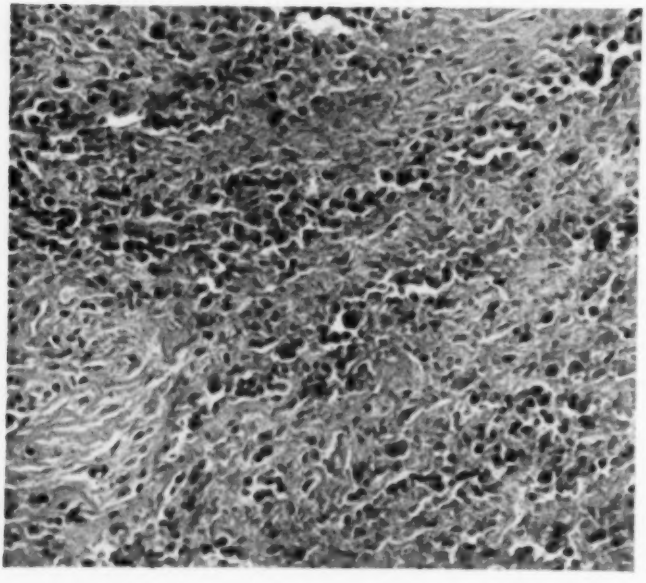

Fig. 4—Section of the spleen showing diffuse fibrosis which has erased the normal architecture. Some lymphocytes are present. x 160.

Despite painstaking postoperative care, the patient succumbed in twenty-four hours. Permission for autopsy was refused.

The spleen and fibrotic mass were carefully examined and microslide sections were prepared and studied. Grossly, the mass, which weighed 4 lb., 15 oz., was found to represent a vascular dilatation involving the splenic vessels. Both arteries and veins were involved, but the bulk of the mass was made up of what appeared to be an aneurysm of the splenic artery. Cross section revealed a marked thrombosis with organization, and a central cavernous area (fig. 3) filled with reddish serum. The spleen, although enlarged, had retained its normal shape and had a firm consistency. Two large, dark-colored, raised areas on the surface were thought to be subcapsular hemorrhages (fig. 2). Histopathological examination of the microslides made possible the diagnosis of Banti's syndrome.

A diffuse fibrosis had erased the normal architecture of the spleen (fig. 4), and the increase in connective tissue had obliterated the lymph follicles. Some lymphocytes were present. Hemosiderin had been deposited in the spleen (fig. 5) from hemorrhages caused by the increased pressure in the portal and splenic veins. Some hemorrhage appeared in the upper layers of smooth muscle of the aneurysm wall and the thrombus had begun to organize.

Fig. 5—Section of spleen emphasizing hemosiderin deposits. x 160.

Discussion.—The lesions were definitely not neoplastic but were identical to those found in so-called Banti's disease in man. In view of these findings, it is probably safe to assume that the liver lesions represented a nodular cirrhosis. In Banti's view, this disorder was a chronic specific disease entity in which the splenic condition was primary and was probably caused by some "noxious agent" which reached the spleen via the splenic artery.[3,4] However, few present-day workers accept this theory. It is believed that conditions producing "up to two to five times the normal pressure of 105 to 120 mm. of water"[4] in the splenic or portal vein can result in

similar changes. In chronic passive congestion of the spleen, the sinusoids dilate and their walls thicken because of retained blood. Anemia, leukopenia, and thrombocytopenia result from increased blood destruction possibly due to hypersplenism.

Summary.—A dog with lesions identical to those found in Banti's syndrome in man is reported. The diagnosis was made on the basis of histopathological evidence. The spleen showed the changes which characteristically result from increased pressure in the splenic and/or portal vein. In this case, cirrhosis of the liver and a dilatation, fibrosis, and thrombosis of the splenic vessels apparently were responsible.

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Leptospirosis in Calves

An outbreak of *Leptospira icterohemorrhagiae* infection was found, in England, in calves less than 2 months old on a farm previously and notably free from common calf diseases. The calves nursed their mothers for three days, then were placed in pen 1. When three weeks old they were moved to pen 2 where a calf meal was fed. On Nov. 12, 1951, 1 calf in pen 2 was dead, 4 were thin but otherwise normal, and 8 other calves showed emaciation, staring coat, tucked-up abdomen, jaundice to a varying degree, and temperatures normal to subnormal. There was no scouring and no hemoglobinuria. The icterus was most noticeable in the sclera, the gums, under the tongue, and around the coronets and horn buds. Ten days earlier 1 calf from pen 2 had been dull and weak so was isolated and fed whole milk. It slowly improved.

On November 13, another calf was dead. Two, in a state of semicollapse, were given an intravenous transfusion of 400 cc. of citrated whole blood from 2 cows and responded rapidly. Ten days after the first death, all the calves were feeding well and signs of jaundice had disappeared. Nevertheless, the calves had been given a severe setback and since then diarrhea and a mild diphtheria has occurred in all calves on the farm.

Ten days before the first calf became ill, they had started feeding a calf meal from a bin badly contaminated with rats. However, the only rat caught did not yield Leptospira nor did its serum show an agglutination reaction. Blood samples from the farm cat, which was an active ratcatcher, did not react to *Leptospira icterohemorrhagiae*. Rats, therefore, were not proved to be the source of infection. Febrile reactions were not found in any of the affected calves, even when a leptospiremia was detected. The stockman who handled the calves took reasonable precautions against infection and his blood tests four months later showed no agglutinins to *L. icterohemorrhagiae*.—*Vet. Rec., Dec. 27, 1952.*

Leptospirotic Periodic Ophthalmia

In Switzerland attempts were made to produce periodic ophthalmia by infecting horses with *Leptospira pomona*. An intraperitoneal inoculation produced infection in 1 horse fed a diet deficient in vitamin B_2. A second horse became infected seven months after the organisms were administered with the stomach tube.—*Vet. Bull., Feb., 1953.*

Ovine Leptospirosis

The occurrence of leptospirosis in sheep and in cattle was reported in New Zealand for the first time in November, 1950. No previous record of sheep mortalities were found in the literature. Ewes and lambs in a paddock near a rat-infested rubbish dump had been in good health. No sickness was observed, yet 12 lambs and 2 ewes were found dead in three days. Autopsies revealed icterus of the sclera and body fat, thin watery blood, yellowish brown liver, brownish discoloration of the cortex of the kidney, and pink urine. No guinea pigs were available but rat inoculations and other laboratory analyses were negative until Levaditi-stained sections of the kidney were found.

In November, 1951, a similar attack occurred. In this case, viable leptospiras

were found in the urine of a live lamb when examined by dark ground illumination. Guinea pig transmissions were positive and serum from recovered cases agglutinated *Leptospira pomona* to a titer of 1:2,000.—*Austral. Vet. J., July, 1952.*

Leptospirosis in Calves and in Men

On a New Zealand farm in November, 1951, 2 young calves died and several were sick but recovered. The owner skinned the 2 calves and noticed jaundice and wine-colored urine. Five days later, the farmer became suddenly ill with nausea, headache, and severe joint and muscular pains. His blood serum reacted positively to the agglutination for *Leptospira pomona*. Later, two other men on the same farm developed similar symptoms and both gave positive agglutination tests. The first man had skin abrasions on his hands but the latter two did not. Blood samples from 5 of 6 recovered calves were positive to the agglutination test for *L. pomona.—Austral. Vet. J., July, 1952.*

Curarization per Rectum.—Introduction into the rectum of a rabbit of a suppository containing curare or curare-like compounds produces the same effect as intravenous injection. Curarization follows the same pattern in both cases: first, the ears drop; then a softening of the muscles of the neck; the head drops; and finally a complete quadriplegia.

Curarization per rectum is less abrupt than by intravenous injection, taking four to six minutes, and it lasts longer. Relaxation continues for three to five hours. Physostigmine and eserine keep their effect as antidotes permitting one to stop the curarization at will or in case of an overdose.—*Science, Jan. 16, 1953.*

Meal-Dust Coughing in Pigs

To demonstrate the fallacy that the dust from feeding dry meal is responsible for the coughing so common in pigs, two portable pig houses and a litter of 10 weaned pigs free from coughs were obtained. Five were put into each house with concrete outside runs. One house was bedded with straw, the other with 2 inches of dust from a grain mill; fresh dust was added weekly. The experiment was repeated with 10 fresh pigs so that both summer and winter conditions were covered.

Pigs in the "dust litter" inhaled dust continually. Their noses and lips became encrusted with meal dust, and it surrounded their eyes. Very rarely was a cough heard and never the spasms of coughing so common in many piggeries. The pigs in the dust litter reached bacon weight first. Of the 20 pigs' lungs examined, only one pair showed any evidence of pneumonia.—*Vet. Rec., Jan. 24, 1953.*

Psychoses in Cats

Ten cats rescued from flooded Canvey Island were given refuge at a London clinic. On the sixth day, several quit eating and soon 6 of the younger cats were showing signs of mental disturbances. While 2 simulated catching flying objects, 4 pursued and fought imaginary rats on the floor. Their plight resembled delirium tremens, although they acted normally toward their attendant. Three acted as if wading in water. Temperatures were slightly elevated. After four days, they resumed eating and normal actions.—Vet. *Rec., April 18, 1953.*

Third Polio Virus Adapted to Mice

The Virus and Rickettsia Laboratory in Montgomery, Ala., has finally succeeded in adapting the third of the three known strains of poliomyelitis virus to growth in experimental mice. Type 2 was adapted to mice and to cotton rats in 1939 but the other two could be studied only in monkeys or chimpanzees. In 1951, type 3 was adapted to mice. Immunity to one type of virus does not produce immunity to the other two, yet the diseases produced by the three types are not clinically distinguishable.

Type 1 is believed to be the cause of most of the human cases. Mouse tests can now be used to study antibody response, to give information as to the mode of spread, and to test the effectiveness of globulin therapy or of new vaccination methods. There is also some hopeful evidence that passaging the viruses through mice reduces their paralyzing effect on monkeys, without impairing their ability to immunize.—*Pub. Health Service.*

The Prevention of Calf Scours with Bovine Serum Solids

ARTHUR B. CHRISTIAN, D.V.M., and CHRISTIAN P. SEGARD, M.D.

Biltmore, North Carolina, and Leonia, New Jersey

THE DISCOVERY of the use of bovine serum solids as a basis for the prevention of calf scours was made by Dr. Karl Paul Link of the University of Wisconsin. He suggested that it be used with vitamin K and predigested milk solids as a preventative of the early virulent diarrhea that appears in newborn calves, other ruminants, and perhaps in a few other species where the antibody requirements are met primarily in the first day's colostrum.

The bovine serum solids are processed in such a manner as to retain a high percentage of the *gamma* globulin or immune factor. The vitamin K addition is to fortify the newborn animal against the hemorrhage that follows intestinal inflammation. It causes an early clotting at the possible portals of entry for bacterial invasion of the capillaries. The extrusion of the serum, rich in antibodies, from the clot is not only antitoxin but antibacterial. Vitamin K supports the liver in the production of prothrombin which is one of the factors in clot formation. Another reason for the early use of this food factor is that all mammalia are born vitamin K deficient.

Since the enzyme system of the calf at this early stage is still quiescent, Dr. Link proposed the addition of predigested milk solids. This becomes a source of food factors, including amino acids, for immediate absorption and supply during the period of development of the digestive enzyme system.

The original investigation[1] was carried out on several hundred calves. The formula first used was 100 Gm. of bovine serum solids, 100 Gm. of predigested milk solids, and 50 mg. of vitamin K. The product was mixed in 1 quart of several different solutions such as water, skim milk, whole milk, and cream. This dosage was given in two feedings; the first half, 1 pint, within one and one-half hours after birth, and the second half six hours later.

It was found early in the investigation that the milk solids caused diarrhea at that level so the amount was reduced to 25 Gm. Another disturbing problem was that when water and skim milk were used, absorption was not as satisfactory as with whole milk. The cream used at this time was too thick when the product was added. Electrophoretic patterns were used to check the transfer of *gamma* globulin to the blood. It was found that the amount of *gamma* globulin present in the blood stream was greater when the whole milk was used.

At that time, an article appeared in a British journal[2] showing that the fat phase of colostrum was possibly an element in the absorption of proteins. Another line of thought was that fat-soluble vitamins followed a definite channel of absorption. A third reference was that toxic proteins followed the fat channel of absorption. From these three references we were led to believe that the fatty acids were important in the absorption of the *gamma* globulin through the intestinal wall. If this were true, it would greatly reduce the dose required. We, therefore, proceeded on this basis.

In the belief that we should have a high fat content, evaporated whole milk was used with the lowest possible level of bovine serum solids, *i.e.*, 25 Gm. To this dose of 25 Gm. of the serum solids was added 50 mg. of vitamin K and 8 Gm. of predigested milk solids. While this dosage gave good results, several calves scoured. The dosage level was then moved up to 35 Gm. of serum solids, 16 Gm. of the predigested milk solids, with 50 mg. of vitamin K.

After this last preventive dosage was tried and found satisfactory, Dr. Link proposed that the severest possible test be run. The calf herdsman (Charles Barker) was told what was desired. Arrangements were therefore made to "capture" the next 75 calves immediately after they were dropped. These calves received no colostrum or other product of any kind. The only feeding was 1 quart of milk with 4 per cent fat, containing the 35 Gm. of bovine serum solids, 16 Gm. predigested whole milk solids, and 50 mg. of vitamin K (plasmalac)® in the first twenty-four hours. This was divided into two portions, the first half, 1 pint, fed

Dr. Christian is veterinarian of the Biltmore Farms, Biltmore, N. Car.; and Dr. Segard, Leonia, N. J., is medical director of the Wisconsin Alumni Research Foundation.

about an hour after birth and the second half about six hours later. Nothing else was given during the first twenty-four hours.

The results on 68 calves so treated were excellent. A few of the calves had diarrhea, particularly following the third feeding of run-of-the-mill milk. This diarrhea could not be classified as scours, since the feces was dark in color and partly formed. This diarrhea ceased in a few hours or responded immediately to treatment. None of the signs of early virulent scours were in evidence. With a similar group of 69 calves on colostrum, many scoured, response to treatment was poor, and 4 died within fourty-eight hours. These two groups of calves were under observation since birth. During the first twenty-four to forty-eight hours after birth, it was recognized that the group receiving plasmalac, the formula given previously, were considerably more alert and active than the group receiving colostrum. At the end of six months, there was not the slightest evidence of any difference in the two groups.

Satisfactory results have also been secured in several other herds.[3]

There was a possibility that scours might be sectional in relation to the bacterial cause of the disease. Therefore, a wide geographical distribution of herds was selected. While the results were comparable, previously adopted methods were continued along with this immunological therapy. This precluded a critical analysis of the results. The bacterial examination of scours from different states showed an amazing similarity. As originally indicated by Theobold Smith, *Bacterium coli* was the common organism. The *communior* and *neapolitanus* strains made up 65 to 85 per cent of the total count.

SUMMARY

1) A new immunological approach to the problem of calf scours is discussed from the preventative viewpoint.

2) The previous dosage had been scaled at much too high a level. The lower dosage proved highly satisfactory in preventing the disease when whole milk was used.

3) It may be that butter fat, particularly the fatty acids with lower carbon saturation, acts as a wetting agent or as a carrier, similar to its action with the fat-soluble vitamins.

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African Swine Fever

Swine fever (hog cholera) was observed in Africa in 1900 but not until 1921 was it apparent that it might differ from the European and American form. It was more acute and there was no reciprocal cross immunity with the other form. The only known susceptible animals are the domestic pig, warthog, and bushpig. However, the virus can be maintained in rabbits for a limited number of passages. Following two alternating pig-rabbit passages, then four consecutive transfers through rabbits, an inoculated pig reacted on the eighth day and was *in extremis* on the eleventh day.

In another series, a pig inoculated after the third passage developed a febrile reaction on the third day and was *in extremis* on the seventh day. Autopsy revealed typical lesions of swine fever.—*J. South Afric. Vet. M. A., Dec., 1952.*

Fatal Infection from Sulfonamide Injection

A man was given an intramuscular injection with a solution of sodium sulfathiazole. On postmortem, a *Clostridium welchii* infection was found at the site of the injection. It is believed that the alkaline solution was responsible for muscle necrosis and that the gas-gangrene infection was secondary.—*Brit. M. J., Feb. 21, 1953.*

Correction — "Anesthesia of the Penis"

On pages 22 and 24 (July, 1953, JOURNAL), the illustrations of the keys to figures 3 and 4 were transposed; they appeared in the article by Lester L. Larson entitled "The Internal Pudendal Nerve Block for Anesthesia of the Penis and Relaxation of the Retractor Penis Muscle."

Phenothiazine-Salt Mixture for Control of *Haemonchus Contortus* in Range Sheep

D. A. PRICE, D.V.M.; W. T. HARDY, D.V.M.; I. B. BOUGHTON, D.V.M.

Sonora, Texas

A LONG-TERM field trial of the use of a 1:9 phenothiazine-salt mixture for controlling *Haemonchus contortus* in range sheep was begun at the Sonora station in 1945. Preliminary trials had suggested that such a mixture offered free choice the year 'round might satisfactorily control the large stomach worm and could possibly replace the practice of drenching.

The study was conducted at the Sonora substation, commonly called the Ranch Experiment Station, which is on the Edwards Plateau, an area of approximately 34,000 square miles in west-central Texas extending eastward from the Pecos River almost to Austin. Vegetation consists of bunch and turf grasses, weeds, and browse. The elevation above sea level varies from 700 to 2,500 ft., and is approximately 2,400 ft. at the Sonora Station. Rainfall is light, an annual average of 24 in. having been recorded at the station over a thirty year period. Summer seasons are relatively hot, and the winters are mild. Sparsity of the vegetation necessitates the grazing of limited numbers of sheep on large pastures, providing some natural control of endoparasites. Also worthy of consideration is the fact that while the bunch grasses common to many pastures may to some extent fail to protect parasite eggs and larvae against the intense sunlight, the turf grasses provide excellent protective environment for them.

Haemonchus contortus is the most important roundworm parasite of sheep in the area with which this article is concerned. It had constituted a serious threat to the local sheep industry prior to the routine use of phenothiazine drench.

Many sheep raisers in the Edwards Plateau region now supply phenothiazine-salt mixtures free choice, having found that it is practicable and controls the large stomach worm satisfactorily. The salt mixture method is more economical than drenching, for although the drug cost of each method is about equal, there are some factors associated with periodic drenching of large flocks of sheep to which a monetary value can not be accurately ascribed. These include time and labor expended in gathering the sheep, weight loss occasioned by holding in pens, and occasional injuries which subsequently become infested with screwworms. The authors concur with some ranchmen in the observation that the pheno-

Fig. 1—Covered salt troughs. When cattle and sheep are pastured together, cattle are furnished plain white salt in high troughs; medicated salt is available for sheep in the lower troughs.

Veterinarian (Price) and superintendent (Hardy), Sonora Substation No. 14; and dean (Boughton), School of Veterinary Medicine, A. & M. College of Texas, College Station.

The work reported in this paper was conducted by Drs. Boughton and Hardy the first three years; by Dr. Hardy during the following two years; and subsequently by Dr. Price.

The authors appreciate the help of Dr. R. D. Turk, head, Department of Veterinary Parasitology, A. & M. College of Texas, in the preparation of this manuscript.

thiazine-salt mixture method of free choice administration had to be used for one or two years before satisfactory control was established on certain ranches.

LITERATURE

A considerable amount of literature is available regarding the use of phenothiazine-salt mixtures, but it will best serve our purpose here to make only a few pertinent remarks concerning it. Some of the earliest work with phenothiazine-salt mixtures for controlling parasites was reported in the early 1940's.[2, 5, 10] Since then, there have been numerous trials, both in this country and abroad, to determine the efficacy of phenothiazine-salt mixtures against nematodes of sheep. Under some conditions, the salt mixtures have failed to afford adequate control and recommendations for supplemental drenching have naturally followed. Some workers, on the other hand, have reported satisfactory control when the proportion of phenothiazine in salt has varied from 1:9 to 1:15. Most of the reports have dealt with short-term studies, some for only three or four months, while the most extensive heretofore published was the four-year study of Rietz and Wilson.[16]

PROCEDURE

Animals used in this study were purebred Rambouillet ewes which were bred to lamb in November and December each year. The conditions under which they were maintained are typical of the local husbandry. Due to mild winters, shelter was never provided, and lambing occurred at pasture without any special attention. Lambs spent the remainder of their lives in the pasture where they were born, except for the brief periods when they were penned for the collection of fecal samples. As ewes became too old for breeding, they were sent to market.

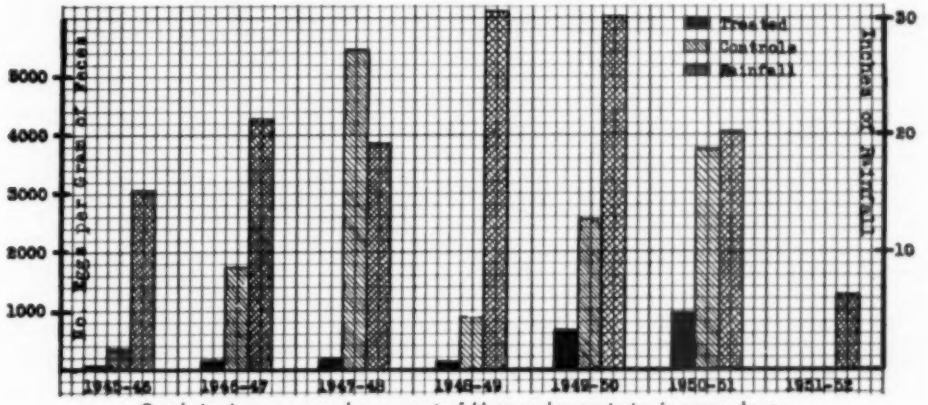
A 400-acre pasture stocked with 65 to 70 breeding ewes and their lambs had access, free choice, to phenothiazine-salt mixture at all times. An adjoining 100-acre pasture containing 14 to 18 ewes with their lambs was furnished with plain white salt only and provided for controls. Both pastures were similar in vegetative covering.

The drug was purchased on the open market as phenothiazine N. F. powder, and was mixed with sufficient ground stock salt to give a 1:9 mixture. Covered salt troughs were used in both pastures, the treated sheep having continual access free choice to the phenothiazine-salt mixture, and the controls having the same stock salt without phenothiazine.

The lambs in each pasture were penned at regular monthly intervals for the collection of fecal samples. Such samples were taken from the new lambs beginning in May each year and continuing periodically until the following May, when the males were slaughtered for the purpose of making actual worm counts. Fecal samples were obtained directly from the rectum. The pellets of each sample were crumbled by hand, then divided into two portions of 3 Gm. each. One portion was subjected to a microscopic egg count, utilizing Stoll's method so modified that the dilution gave results in multiples of 400. The other portion of each sample was incubated in a test tube at room temperature to provide an estimation of larval development. The sides of the tubes were moistened daily to enable larvae to ascend the walls and estimations of larval numbers were made at the end of a week. Designations of 1 + to 4 + were ascribed, indicating larval numbers of 1 to 25, 25 to 50, 50 to 100, and more than 100.

RESULTS

Graphs 1 to 3 summarize the data obtained with respect to egg counts, larval development, and worm counts at necropsy. The near-zero level of egg counts during the 1951-1952 season is probably the direct



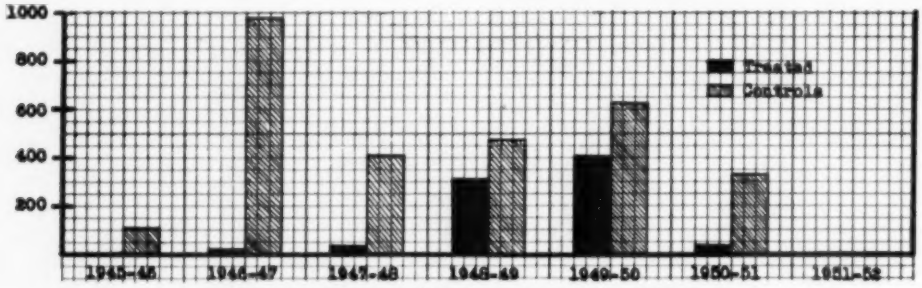
Graph 1—Average annual egg count of Haemonchus contortus in range sheep.

result of the most severe drought ever recorded in West Texas. The total rainfall recorded at the Sonora station for the year ending May, 1952, was 6.29 inches. Although a few Haemonchus parasites were counted during necropsy examinations at the end of that period, the dilution used in the egg counting technique was such that eggs were not detected in such small numbers.

SUMMARY

Two flocks of sheep were used in a seven-year study to determine whether a 1:9 phenothiazine-salt mixture would serve as the sole means of controlling *Haemonchus contortus* in sheep maintained under range conditions typical of the Edwards Plateau. One flock had continual access, free choice, to a 1:9 phenothiazine-salt mixture during the entire period; the other flock, in an adjoining pasture, provided for controls and received plain white salt only.

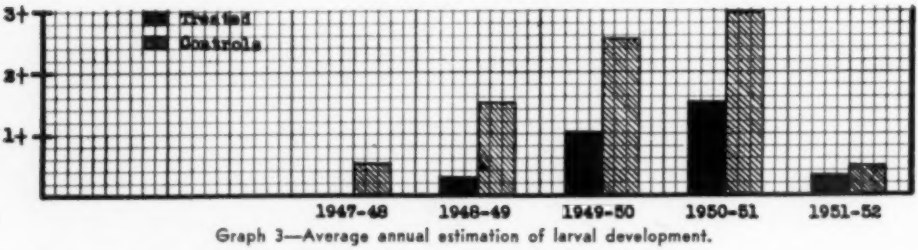
Data obtained from egg counts, estimations of larval development, and actual worm counts at necropsy, all showed that the 1:9 phenothiazine-salt mixture satisfactorily controlled *H. contortus* in range sheep over a period of five to seven years under the climatic conditions obtaining on the Edwards Plateau.



Graph 2—Average number of worms counted at autopsy.

Although all of the sheep in each flock were observed clinically each time fecal samples were collected, at no time were there noted any symptoms attributable to phenothiazine toxicity. This seems especially significant in view of the fact that the ewes usually attained the age of 6 to 8 years before they were sent to market. There were no apparent differences between the treated and control flocks with respect to wool or lamb production.

The phenothiazine-salt consumption averaged slightly less than 150 Gm. per sheep per month, the rate varying considerably from month to month and from year to year, due probably to variations in the annual rainfall and to the presence each year of growing lambs.



Graph 3—Average annual estimation of larval development.

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Terramycin in Actinomycosis in Man

Seven cases of mandibular actinomycosis in patients ranging from 13 to 51 years of age were treated with terramycin (oxytetracycline hydrochloride) with complete recovery in each case. The dosage was from 250 to 500 mg., given orally every six hours for an average of twenty-four days. Two cases followed tooth extractions.

Four of the cases had failed to respond to penicillin treatments which, in 1 case, were combined with sulfonamides and in another case with chloromycetin® (chloramphenicol). However, all showed improvement after a few days' treatment with terramycin and were completely recovered in an average of two to three weeks. One case had a relapse in about three months and was given potassium iodide with the terramycin therapy for about four weeks, after which the case fully recovered. *Actinomyces bovis* was recovered from each case.—*J.Am.M.A., March 21, 1953.*

Pathogenic Virus Lived Many Years

The University of Michigan recently announced that a test tube containing a deadly virus, which had been hunted for thirty-five years, was recently found and the virus killed rats within a few hours. Viruses usually require the presence of living animal cells to survive and most of the 100 known viruses die within a few days or weeks after removed from living cells.—*Lab World, Feb., 1953.*

Rabies in a male beaver, showing furious type symptoms, was diagnosed by histological examination at Columbia, Mo.—*Vet. Bull., April 15, 1953.*

Avian Cerebellar Hypoplasia and Degeneration

ROLAND W. WINTERFIELD, D.V.M.

St. Louis, Missouri

A NERVOUS disturbance characterized by uncontrollable bobbing or anterior-posterior, palsy-like movements of the head and cervical regions of pullets was observed in several hatchery breeder supply flocks. These involuntary movements were suggestive of a cerebellar involvement.

LITERATURE

Congenital "loco" in recently hatched chicks has been described by Knowlton.[1] Affected chicks hatch normally but usually can not stand for more than a few seconds. This condition is nearly always lethal within a week after hatching. The anatomical basis for the abnormality is not known. Hutt and Child[2] indicate that congenital tremor is sometimes manifested in chicks at hatching. Very few survive more than a week. Apparently the genetic basis is complex. Equal numbers of males and females are involved. Bohren[3] reported a highly lethal, sex-linked nervous disorder in day-old chicks called "jittery." Scott *et al.*[4] described a sex-linked, semilethal nervous disorder designated as the "shaker" fowl. A rapid movement of the head and neck was seen as early as the eighteenth day and most affected birds manifested symptoms by the end of the fourth week. Few individuals were able to walk after the age of 10 weeks. In the majority, death resulted from inanition. Histopathological findings indicated degeneration and disappearance of the Purkinje cells. No mention was made of any gross alterations in the cerebellar structures. Mueller[5] has studied the linkage relationships of the gene for shakers.

Innes *et al.*,[6] Anderson and Davis[7] have reported on familial and congenital cerebellar hypoplasia in calves. Gross disorganization of the normal cortical structures and a rudimentary cerebellum were observed. The macroscopic and microscopic findings were somewhat similar to those described in the following report on chickens.

HISTORY

In 15 separate hatchery replacement breeding flocks of about 300 birds per flock, the nervous disorder was reported occurring at about 12 weeks of age. The symptoms were confined entirely to pullets and consisted of bobbing and weaving of the head and neck. Some individuals became ataxic if excited, but severe symptoms of incoördination were not often observed. During the brooding period, livability was about 95 per cent for all involved flocks. Detailed records were not available for all birds during the growing period, but the growers and hatcherymen reported good growth response and livability, with no other disease conditions or abnormalities observed. None of the flocks was vaccinated for any disease. The affected birds came into production at about 6 months of age, at which time all those manifesting nervous symptoms were culled. The incidence ranged from 10 per cent on two farms down to 3 per cent on others. No deaths occurred in the affected birds.

The flocks involved were meat strain New Hampshires hatched from two key breeder flocks maintained by the hatchery. Two key flocks served as a source of female breeding stock and the male birds used were purchased as chicks from an R.O.P.* New Hampshire breeder. The latter has a "closed" flock or breeding plan. No abnormal symptoms were reported in the parent stock.

LABORATORY FINDINGS

Clinical.—A total of 7 pullets approximately 7 months of age were examined clinically. All exhibited the involuntary weaving and bobbing movements of the head and cervical region characteristic of

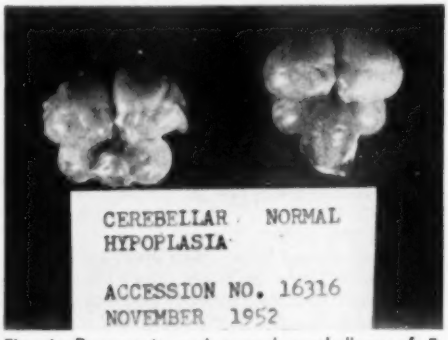

Fig. 1—Degenerate and normal cerebellums of 7-month-old pullets.

From the Disease Control Laboratories, Ralston Purina Company, St. Louis, Mo.

Microphotography, courtesy Dr. David Orrahood, School of Medicine, St. Louis University.

*Record of performance.

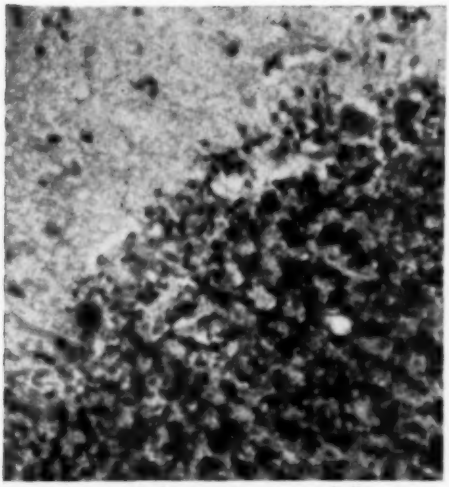

Fig. 2—Neuronal degeneration in cerebellar cortex. x 200.

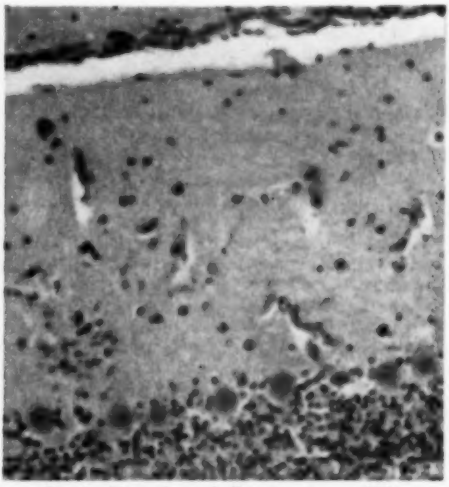

Fig. 3—Normal cerebellar structure. x 200.

affected birds in the various flocks involved. Fine head tremors were observed in 1 and another lacked coördination in locomotion when excited. These symptoms are not unlike those observed in some outbreaks of Newcastle disease or avian encephalomyelitis. The history, however, did not suggest either of these infectious diseases. Except for the nervous symptoms, all were normal in appearance, well feathered, and in good flesh.

Necropsy.—Significant gross pathology was confined to the central nervous system. Six of the 7 birds possessed distinctly rudimentary cerebellums (fig. 1) indicative of hypoplasia or atrophy. The size was approximately ⅛ to ¼ normal for that age and about ½ the size of cerebellums from normal day-old chicks. Grossly, the folia of the cerebellar cortex were not distinct, the sulci being extremely shallow. The marked cerebellar dwarfing as seen in these birds has not been described in any of the nervous disorders in the avian species. Three birds were in an active state of egg production.

MICROSCOPIC PATHOLOGY

Histopathological studies were made from hematoxylin- and eosin-stained sections of the cerebrum, cerebellum, and brain stem of 3 pullets. Pathological changes were confined to the cerebellar cortex in each instance, with the molecular and granular layers being exceedingly thin. Many neurons of the cerebellar cortex revealed degenerative changes as represented by swelling, loss of Nissl substance, and chromatolysis of nuclei. In some sections, a decided decrease in numbers of Purkinje cells was observed and cells remaining had undergone various degrees of degeneration. Perivascular cuffing, neuronophagia, inclusion bodies, and necrosis were not observed.

Virus isolation studies in embryonating chicken eggs were negative. Serum-neutralization and hemagglutination-inhibition tests for Newcastle disease antibodies and routine bacteriological cultures were also negative.

CONCLUSIONS

The onset of symptoms at a semimature age and the accompanying cerebellar dwarfing with neuronal degeneration indicates an atrophic as well as a hypoplastic condition. History, clinical observations, and laboratory findings suggest the presence of a sex-linked, recessive factor as causative of the pathological changes and resulting nervous symptoms. This can not be verified, however, without accurate pedigree records. These were nonexistent.

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A Puzzling Poisoning of Calves.—Three calves, 3 weeks to 3 months old, died in a period of sixteen months at the University Farm, Bristol, Pa. One was found dead, the other 2 showed nervousness or convulsions, and all were negative on autopsy. Specimens were examined by spectographic means for heavy metals. They revealed the presence of excessive lead. The 3 calves had been in the same pen and apparently had chewed on a post which had last been painted several years before.—*University of Pennsylvania Bull., April 17, 1953.*

Use a low-pressure crop-spraying outfit to treat sheep for tick control if dipping facilities or a high-pressure spraying rig are not available.—*Prairie Farmer, Dec. 6, 1952.*

New Approach to Screw Worm Control

When the pupae of the screw worm are exposed to 5,000 roentgen rays, the flies which hatch are incapable of reproducing but are not seriously affected otherwise. Sterile males will mate with normal females but the eggs deposited are infertile. Since sterile males compete successfully with normal males and females mate only once, it might be feasible to raise, treat, and release enough sterilized males to significantly reduce the number of screw worms in any community. The *gamma* rays from radioactive cobalt apparently have the same effect as do x-rays and could be used more readily. Cathode rays also will cause sterility of the flies.—*U.S.D.A.*

Traumatic Gastritis in Cattle

Usually, a foreign body penetrates slowly through the reticular wall so the perforation is preceded by a local fibrinous peritonitis. Therefore, the foreign body penetrates only the adhesion, not the abdominal cavity. Many cases heal and subside spontaneously. In one abattoir series of 100 clinically normal cows, 42 had such adhesions with a foreign body still present in 8. Therefore, surgical interference is advised only when the animal fails to respond to conservative treatment, although this delay involves the risk of serious complications.—*Vet. Bull., April, 1953.*

Immunity to Cysticercus Bovis

N'dama cattle, a dwarf breed raised in West Africa, were examined at the abattoir for the incidence of *Cysticercus bovis.* The age of 1,000 cattle was determined by their teeth, and their degree of infestation was recorded. The number of parasites found decreased as the age increased. Cows over 5 years old apparently did not become reinfested. It is suggested that if only animals over 5 years old were butchered for meat, both cysticercosis in cattle and teniasis in the human population might be controlled.—*Vet. Rec., April 18, 1953.*

Swine Erysipelas in Seals

"Blubber finger," an infection in people who catch seals or handle sealskins, appears to be erysipeloid, therefore, a disease of seals comparable to swine erysipelas was studied. An aërobic gram-positive Bacillus was isolated from the lesions. It was not pathogenic for pigeons or pigs.—*Vet. Bull., Dec., 1952.*

DDT and Methylene Blue Milk Tests.—Since DDT is occasionally detected in milk, its influence on the methylene blue reduction test for checking the sanitary quality of raw milk was studied. Appreciable quantities of DDT materially interfered with the accuracy of the test.—*Milk and Food Technol., Jan.-Feb., 1953.*

Eggs of insect roaches will not hatch if the parents are deficient in vitamin B_{12}.—*Sci. News Letter.*

Human Brucellosis in Minnesota

Over a three-year period, 85 per cent of brucellosis cases in man in Minnesota were due to *Brucella abortus*. In Wisconsin, nearly all are due to *Br. abortus* but in Iowa, Georgia, and Alabama, more cases are due to *Brucella suis*. About 75 per cent of all cases in the United States are due to *Br. abortus;* however, more from contact with animals than from drinking raw milk. Surprisingly, many cases in workers on the "hog kill" have *Br. abortus* infection. Hogs are now known to be infected by, and to transmit to man, all three Brucella types. There are about as many *Brucella melitensis as Br. suis* cases in man.

From the world viewpoint, *Br. melitensis* is the most important type. It produces the most serious illness. Children, like calves and pigs, apparently are more resistant to brucellosis than adults. Brucellosis is mostly an occupational disease, and the No. 1 disease transmitted from animals to man, but it is not primarily a disease of man. The ghost of chronic brucellosis should be laid. These cases are not common—74 to 80 per cent recovering within a year.—*Rep., North Central States Brucellosis Conference, July, 1952.*

Nocardia Infection in Cats.—In Turkey, 2 cats were found with Nocardia infection. They had exhibited a purulent submandibular lymphadenitis and exudative pleurisy, respectively. Numerous lesions in the lung varied from the size of a grain of wheat to that of a hazlenut.—*Vet Bull., May, 1953.*

Heat Exhaustion in Mink

Prolonged exposure to excessive heat from the sun or from close confinement, such as in an unventilated nest, may cause the loss of many kits and even of adult female mink. The affected female may not take care of her kits or she may become nervous and drag them out on the wire floor of the pen where they are killed by the direct sun, or they may fall through the wire floor. Water sprinklers or wet burlap laid over the top of the pen, so as not to curtail air movement, should cool off the quarters. Sheds roofed with aluminum, which reflects the heat, are an advantage. Young foxes may also be affected by the heat.—*Fur News, April, 1953.*

Increasing Barnyard Sanitation

During thawing periods and rainy seasons, paved barnlots result in better sanitation, less feed waste, less labor, more comfortable and more profitable animals. The University of Missouri recommends 4-inch concrete floors of 15 sq. ft. per hog, 25 to 40 sq. ft. per steer, and 50 to 75 sq. ft. per dairy cow.—*Poult. Farmers Coöp. A. J., May, 1953.*

Foot Rot in Sheep

In Australia, contagious foot rot of sheep has, due to recent increased rainfall, become quite prevalent. The organisms involved are *Fusiformis nodusus* and *Spirochaeta penortha.* Sulfamezathine was first tried on 24 field cases. The infected feet were carefully pared to expose necrotic areas, and each sheep was given 1 Gm. of the drug per 15 lb. of body weight, intravenously. After one treatment, 18 recovered; 2 others recovered after a second treatment three weeks later.

However, in controlled tests when the infected feet were carefully pared, the untreated responded about as well as the treated animals. When the feet were not trimmed, there was no response to treatment either with sulfamezathine or with adequate doses of penicillin. Local treatment, soaking the affected feet in a 1 per cent solution of the detergent germacide, cetavlon, also was ineffective.—*Austral. Vet. J., March, 1953.*

The chief sources of vesicular exanthema infection are New Jersey and California. These states raise but a fraction of the hogs produced yet they endanger the entire livestock industry.

Swine Erysipelas Immunization

A European author states that because of difficulties in creating an artificial infection in pigs, by inoculation with *Erysipelas rhusiopathiae,* there is a lack of data on the degree and duration of immunity conferred by vaccines. The skin scarification technique of inducing infection, used considerably in recent years, has given satisfactory results for some investigators while others have found it of little value.—*Vet. Bull., Feb., 1953.*

NUTRITION

Complete Rations for Runt Pigs

At Michigan State College, two groups each of 9 runty pigs, 8 to 10 weeks of age and weighing 12 to 21 lb., were used in a feeding experiment. All were thin, emaciated, and scouring. After being sprayed with lindane and fed sodium fluoride to eliminate parasites, one lot was self-fed a complete mixed ration while the other lot was given the same feed but with the supplement fed free choice in a separate self-feeder. Terramycin was included at the rate of 5 mg. per pound of complete ration.

Scouring stopped in both lots after one week. There was no difference in the rate of gain but the free-choice group, finding the corn more palatable than the supplement, ate more corn. Although their total protein consumption was slightly greater than the other group, they required 2.76 lb. of feed per pound of gain, whereas those on the mixed ration required only 2.08 lb. Apparently the excess of certain ingredients in a ration is wasted.—*Hog Breed., June, 1953.*

Edema in Pigs on Cod Liver Oil

Two 8-week-old pigs (litter mates) were fed a ration containing a mixture of equal parts of cod liver oil and lard. The amount was gradually increased until, by the seventh week, it comprised 50 per cent of the ration. Both pigs then lost their appetites and developed a diarrhea and a swelling of the neck and abdomen. They deteriorated rapidly, developed an unsteady gait, and were killed for autopsy on the forty-ninth day.

The back region was normal but ventrally a marked edema extended from the jaw to the rump, although the legs were not affected. Marked edema was present in the mesentery and perirenal region. The mucosa of the anterior intestine was a deep red, the kidneys were edematous, but the liver was normal. On histological examination, hyaline and necrotic areas were evident in the muscle of the heart but there were no dystrophic lesions in the muscles of the limbs. The dependent edema resembled that in chickens on a vitamin E deficient diet and the heart lesions were similar to those of the same condition in other animals.—*Vet. Rec., April 25, 1953.*

Anomalies from Excessive Vitamin A

Congenital abnormalities have been produced in fetuses when their environment is influenced by chemicals, endocrines, and mechanical or actinic factors. While investigating skeletal changes from hypervitaminosis A, in mature rats, several females produced offspring with congenital malformations. Therefore, 150 female rats were mated and from the second to the sixteenth day were specially treated.

One hundred received 35,000 I.U. of vitamin A daily, while 50 controls received only the diluent. The 50 controls produced 44 litters with a total of 410 normal newborn; of the 100 hypervitamin females, only 10 carried their young to term with a total of 74 offspring, and 34 (54 %) had teratomas. In each, the skull was defective with the brain protruding, covered only by a thin membrane, and many also had harelips, cleft palates, or gross eye defects.—*Science, May 15, 1953.*

Milk Substitutes for Pigs

At the Wisconsin Station sows' milk fed *ad libitum* in laboratory environment produced faster gains than synthetic milk, suggesting that the quantity of milk is the limiting factor when pigs nurse.—*Vet. Sci. News, Jan., 1953.*

In tests of rations at the Quaker Laboratory, Chicago, pullets fed an oat ration developed into larger birds than those fed a formula based on corn. The corn-fed poultry also ran more to fat than the oat-fed birds. Wheat and barley were considered inferior to the first two grains as poultry feed.—*Feed Bag, Jan., 1953.*

In milk substitutes for calves, high fat ingredients such as soya flour tend to produce scours; banana meal tends to reduce diarrhea but is low in digestibility.—*Vet. Sci. News, Jan., 1953.*

EDITORIAL

Keeping Step with the Wonder Drugs

An article in the *Journal of the American Medical Association* (June 13, 1953) by Dr. W. W. Spink, M.D., of Minneapolis, Minn., summarizes the clinical benefits as well as the problems created by the rapidly shifting symphony of the new therapeutic agents, especially the antibiotics. He mentions a few infectious diseases which have yielded to modern therapeutics.

Many veterinarians will agree that the newer therapeutic agents, such as the sulfonamides and antibiotics, have also enabled them to obtain highly beneficial effects in a number of animal diseases, the treatment of which was formerly far from satisfactory with the products then available. Whether or not veterinarians are also aware of the problems that the newer agents are creating or may create is a question. There is evidence that they are beginning to realize these problems.

On the beneficial side, we need only to reflect on our futile efforts, in years gone by, to save animals afflicted with such highly fatal diseases as blackleg, malignant edema, and well-developed pneumonia, also our limited results in treating cases of omphalophlebitis, fowl cholera, anthrax, and mastitis, and the many secondary infections which accompany the virus disease, such as old-fashioned feline distemper and so-called "shipping fever" in cattle.

Now, in this antibiotic era, not only have the losses from such diseases been greatly reduced but the beneficial effects of the new drugs are often prompt and definite.

The physician, who usually has the results of complete laboratory tests available, should be able to prescribe his drugs more specifically and evaluate their effects more correctly than can most veterinarians. Yet even with these advantages, Dr. Spink points out that "a current pernicious therapeutic philosophy" exists. Its basic concepts are that antibiotics: (1) are markedly effective against many common bacterial infections; (2) are inexpensive, relatively safe, and easily administered; therefore (3), they may be given to febrile cases without investigating the etiological factors. Then if recovery does not follow, an earnest, etiological study can be made. This mode of therapy may prove to be effective in many cases but it also may mask the symptoms and thus make a correct diagnosis more difficult. At times, it may actually jeopardize the chances for recovery.

Dr. Spink refers to the widespread occurrence of respiratory diseases, including influenza, which occurred last winter and to the many persons who took antibiotics "with or without the advice of physicians" only to find that the clinical course of their ailment was unaltered, and that frequently the "antibiotics induced troublesome, and even disabling, side-effects."

There is a considerable similarity between the above "flu" phenomenon and the veterinarian's experience with shipping fever in cattle, despite the fact that the latter disease does respond to some of the newer antibiotics. Many persons developed rather persistent digestive disorders after taking liberal quantities of certain antibiotics orally, especially aureomycin and oxytetracycline (terramycin). Likewise some cattle, when given sulfonamides orally for several days, also developed digestive disorders, chiefly anorexia and occasionally diarrhea. Physicians apparently feel that antibiotics altered the intestinal flora of such persons, even encouraging the development of pathogenic fungi, whereas veterinarians assume that it is the ruminal flora of the bovine patient which is principally affected.

Antibiotic Activities

Dr. Spink emphasizes that "most of the viral infections, many fungus diseases, and some bacterial infections are not benefited by antibiotic therapy."

He warns that 1 or 2 per cent of human patients are hypersensitive to penicillin and that their reactions may vary from a "mild, febrile response with or without skin eruptions, to a violent systemic illness that simulates serum sickness;" and occasionally death.

He also reports that streptomycin may

induce "fever, skin rashes, and purpura . . . and damage to the eighth nerve," with "varying degrees of loss of hearing." Such side effects are usually less readily detected in animal patients; so, they may occur more frequently than veterinarians realize.

Dr. Spink lauds the pharmaceutical industry for its resourcefulness in investigating hundreds of antibiotics. However, he also observes that when a new, acceptable antibiotic is found, it is usually exploited as if the producer feared that a "more desirable antibiotic of their competitor will be marketed." Also "companies that have not discovered their own antibiotic . . . have often launched an altered form of an established antibiotic, such as penicillin, or a combination of antibiotics, and some even . . . place a revised . . . sulfonamide" on the market for competitive reasons. He adds that "it is little wonder that the bewildered physician, besieged by detail men, attractive literature, and voluminous reports in the medical press, hardly knows which way to turn . . ."

With reference to the many available forms of penicillin, Dr. Spink emphasizes that they all have "the same antibacterial activity but differ . . . in their rates of absorption." Also that no mistake will be made "by using the inexpensive crystalline penicillin G . . . provided enough . . . is injected," especially since the aqueous solution is preferred in many conditions. He also states that "streptomycin and dihydrostreptomycin have essentially the same antibacterial activity."

Where it is impossible to determine the etiological agent, Dr. Spink advises using one of the "broad spectrum antibiotics that affect gram-positive and gram-negative bacteria, as well as rickettsias, and even some of the larger viruses." Of this group, chloramphenicol (chloromycetin®), because it occasionally causes a fatal aplastic anemia in man, is reserved for infections which do not respond readily to aureomycin or oxytetracycline.

With reference to the use of combined or multiple antibiotics, Dr. Spink states that "present knowledge affords but limited indications . . . for combinations . . . in the treatment of systemic infections."

Laboratory Service Evaluation

Many of the problems herein referred to in the use of antibiotics for human patients are not applicable to their use in the veterinary field but, basically, the problems are similar. Until laboratory analyses and diagnoses become more available to the practicing veterinarian, he may have no choice but to use the trial and error, or "therapeutic diagnosis" system, for determining their correct use. Yet, if he seeks the advice of unbiased veterinary sources, such as our various diagnostic laboratories, research and teaching agencies, the "trials" may be run without too many "errors." It should be abundantly evident that the very specificity of antibiotics for certain microörganisms demands a more definite knowledge of the etiological agent involved instead of that "pernicious therapeutic philosophy" of neglecting the detailed diagnosis.

Mastitis provides a good example. Apparently, *Streptococcus agalactiae* is quite readily destroyed by penicillin whereas other microörganisms frequently involved are not. Bacteriological identifications from mastitis specimens, therefore, is good practice and often essential for effective therapeusis. For the lone practitioner, especially if he is any distance from a diagnostic laboratory, bacteriological differentiations in any type of specimens may be difficult to obtain. Therefore, the present trend toward group practice, if it will make available laboratory facilities as well as hospital facilities, should be a distinct advance in giving veterinary medical service.

It must be discouraging and often embarrassing for one who has earnestly sought to study and master a disease problem to later learn that his theories and concepts have been based on a false premise. Many sleepless nights doubtless have resulted from the realization, by a conscientious practitioner, that he has erred in his diagnosis and therapy because he neglected, or was unable to get, laboratory aid or confirmation for that diagnosis.

Fortunate is he who has easy access to a good diagnostic laboratory, private, commercial or state, and foolish is he who does not make arrangements to take the fullest advantage of such facilities.

And, last but not least, *never*, under any conceivable circumstances *should a thorough physical examination be slighted.* Think of the suffering unallayed, the unnecessary expense and embarrassment involved in the case where, after using large quantities of antibiotics for several days, a cow was found to be lame because of a tight rubber band around her "infected" digit.

Louis Amos Klein—1871-1953

Louis A. Klein of Moylan, Pa., former professor and dean of the School of Veterinary Medicine, University of Pennsylvania, passed away June 22, 1953, at the age of 83. He had been in failing health in recent years.

Born May 10, 1871, in Philadelphia, he received his early education in the public schools and then entered the University of Pennsylvania from which he received his V.M.D. degree in 1897. He engaged in general practice in Philadelphia for a time and then served as an inspector for the Bureau of Animal Industry for a year. From 1899 to 1902, Dr. Klein was professor of veterinary science at Clemson Agricultural College in South Carolina; from 1902 to 1904, he was professor of veterinary medicine at Iowa State College during the deanship of Dr. John H. McNeil, also a Pennsylvania graduate. In 1904, he returned to his native state where he was deputy state veterinarian for three years, and helped fight the 1908 outbreak of foot-and-mouth disease.

In 1907, ten years after graduation, Dr. Klein joined the faculty at his alma mater and from that time until his retirement, in 1947 to professor emeritus status, he devoted his life and talents to that institution, first as professor of veterinary hygiene and pharmacology, later as dean for twenty-one years. This period (1909 to 1930) witnessed the initial peak growth of veterinary education in North America during the second and third decades of the century, as well as its decline and "depression" days following World War I. Through these trying times, Dr. Klein maintained a fundamentally sound perspective and calm judgment of the long-term needs for veterinary education and services and their place in the nation's economy. His deanship at Pennsylvania was the longest of any individual's, up to the present time.

Dr. Klein's interest and influence in advancing veterinary educational standards were marked. He was one of the active proponents of extending the curriculum and raising entrance requirements for veterinary schools. Thus, in 1907, it was he who presented the resolution at the AVMA convention in Kansas City, which he and others had drafted, that led to a high school diploma as the minimum entrance requirement and, later, to the one year of college education which Pennsylvania adopted in 1936. He served briefly on the Committee on Intelligence and Education, forerunner of the present Council on Education.

Less well known, but remembered by those who took part in the formative stages of the Army Veterinary Corps, were Dr. Klein's contributions in formalizing the working basis for the commissioned veterinary service which came into being in 1917. Veterinary Corps officers of that time say that his most important service to the military veterinary profession was the creation of the milk and meat-food inspection program of the Army Veterinary Corps, and that he was truly its founder and organizer. "Special Regulations No. 70" governing the veterinary military service, which Dr. Klein helped to draft, were made a special order of the Secretary of War in December, 1917, and became the "charter" under which that service was integrated into the military establishment.

He was also a recognized authority in milk and dairy hygiene both at home and abroad. In 1910, he went to Europe and studied under Professor B. Bang and in the laboratory of Professor Jensen in Copenhagen. He translated Jensen's book on milk hygiene and also published or translated other books such as Fröhner's text on therapeutics. He spelled out in detail methods of dairy farm and dairy cattle inspection and became a recognized authority in the sanitary requirements for certified milk production, in which field he served as a member of medical milk commissions and as supervising veterinarian of certified milk herds. He also did considerable research on dairy cattle diseases, especially mastitis, and received the Borden Award and Medal in 1951 in recognition of that work.

Dr. Klein was an active member of his local, state, and national veterinary associations for many years and served them in various capacities. He joined the AVMA in 1900 and was made a life member in 1951.

He is survived by his widow, Mrs. Sue Harris Klein, and a married daughter, Mrs. Harry A. Rule of Media, Pa. Interment was in a national cemetery in Beverly, N.J.

CURRENT LITERATURE

FOREIGN ABSTRACTS

Influence of Antibiotics on Fructolysis in Diluted Semen

Using a colorimeter method for the determination of fructose, it was found that at 37 C. penicillin, streptomycin, aureomycin, or terramycin and chloromycetin have only a slight effect on the fructolysis of bull serum when these antibiotics are used in dilution of 1,000 units, 10,000 μg., 50 μg., and 400 μg. per milliliter, respectively. The respective antibiotics do, however, suppress fructolysis at 37 C. when used in concentrations of 10,000 units, 10,000 μg., 500 μg., and 800 μg., respectively. Sulfonilimide inhibits fructolysis when used in concentrations of 0.3 per cent. During storage at 5 C. for eight days, fructolysis was inhibited only in dilutions of bull semen containing 10,000 units of penicillin, 1,000 or 10,000 μg., of streptomycin, or 400 to 800 μg. of chloromycetin. It is stated that caution should be exercised in using antibacterial agents which may have too great an inhibitory action on the metabolism of bull semen.—[*N. O. Rasbech: The Influence of Antibiotics on Fructolysis in Diluted Semen. Nord. Vet.-med., 5, (March, 1953): 193-210.*]—A.G.K.

Hemorrhage Due to Hypoprothrombinemia on Expression of the Corpus Luteum

Indications for removal of the corpus luteum occur often in practice and this procedure has been used for a long time in the therapy of sterility. Expression of the corpus lutem is usually done with little risk. During the course of twenty years' practice, only 4 cases of fatal outcome were noted. A review of the literature disclosed that severe hemorrhage is not a common complication. When it does occur, it is the result of some preëxisting abnormal state such as prolonged coagulation or prolonged bleeding time. The authors discuss briefly Owren's theory of blood coagulation and describe their studies on the prothrombin content of blood. In comparison to prothrombin levels of man, with 100 per cent taken as a standard, that of the horse was found to be 70 to 80 per cent; ox, 20 to 30 per cent; and the dog, 130 to 140 per cent. The low level for cattle accounts for the normally long coagulation time of up to thirty minutes. A case is reported of severe hemorrhage in a cow following expression of the corpus luteum. The coagulation time was fifty-two minutes and the prothrombin level only 9 per cent. The prothrombin level of 4 other cattle in the herd was normal. Treatment with vitamin K resulted in values of twenty-six minutes for coagulation time and twenty-eight per cent prothrombin. —[*H. Stormorken and J. Teige: Hypoprotbrombinemia as the Cause of Hemorrbage on Expression of the Corpus Luteum. Nord. Vet.-med., 5, (Feb., 1953): 149-159.*]—A.G.K.

Distemper Prophylaxis in Dogs

An inactivated vaccine (virogen) was used on 204 dogs, of which 199 completed the series of three injections. The dogs were of 31 different breeds and varied in age from 3 to 18 months. None of the animals had been exposed to distemper virus nor had they been previously vaccinated with any other product. Of the 199 animals observed over a two-year period, 12 had slight reactions that were transitory, 13 died of causes other than distemper, 6 had other illnesses from which they recovered, and only 4 had distemper. In these cases, the disease was not severe and the animals recovered. In addition to dogs, the vaccine was used on a few foxes and ferrets. Some of these were injected with distemper virus in two or six months without the development of the disease. Nonvaccinated ferrets died.—[*J. L. Flatla: Vaccine with Inactivated Virus in Distemper Prophylaxis in Dogs. Nord. Vet.-med., 5, (Feb., 1953):160-165.*]—A.G.K.

Estrus-Promoting Effect of Aphrodisiacs in Gilts and Sows

In 415 animals, chorionic gonadotropin produced estrus followed by copulation in 85.6 per cent, of which 57.4 per cent resulted in pregnancy with litters averaging 9.4 pigs. Increasing the dose from 250 to 500 units caused no greater effect. A mixture of chorionic gonadotropin and pregnant mare serum used in 170 animals resulted in estrus in 95.8 per cent, resulting in 82.2 per cent pregnancies with litters averaging 9.9 pigs. Naturally occurring estrogen was used in 415 females of which 83 per cent showed signs of estrus, with 68.5 per cent pregnancies, and litters averaging 8.3 pigs. Increasing the dose from 10,000 to 25,000 units resulted in a slightly larger percentage of pregnancies. A combination of naturally occurring estrogens and pregnant mare serum in 147 animals caused 93.1 per cent to develop estrus, with 79.5 per cent pregnancies, and an average litter of 10.2 pigs. Stilbestrol induced estrus in 65.4 per cent of 362 females, of which 38.3 per cent became pregnant, with only 6.2 pigs per litter. Certain sequelae such as irregularity of estrus was seen in the animals treated with stilbestrol. A small number of females were treated with vitamin D_2, or with car-

tharides tincture with little or no effect.—[*N. O. Rasbech: Investigations on the Use of Aphrodisiacs in Gilts and Sows. Estrus-Promoting Effect and the Size of Litter in 1,655 Animals. Nord. Vet.-med., 5, (Feb., 1953): 131-148.*]—A.G.K.

Group Ca Streptococci in Infections of the Bovine Udder

A review of the literature is presented, followed by an account of the author's experience in identifying streptococci from the cattle in 22 dairy herds. In 17 herds with a total of 382 cows, the first examination disclosed that 13 per cent had Ca streptococci. In five herds being periodically tested for mastitis, there were only 5.2 per cent with Ca infection out of about 250 cows. Ca streptococcic mastitis may be successfully treated with penicillin. The possibility that Ca streptococci may be transmitted from man to cattle is suggested.—[*Ole Romer: Significance of Group Ca Streptococci in Infections of the Udder in Cattle. Nord. Vet.-med., 4, (Dec., 1952): 1129-1147.*]—A. G. K.

Type Differentiation During an Epizoötic of Foot-and-Mouth Disease

Complement fixation was found to be useful in differentiating types O, A, or C of foot-and-mouth disease and in identifying an outbreak of C virus during an epizoötic of A_5 virus. Complement fixation may not be useful in differentiating variants. During outbreaks of the disease in vaccinated animals, it will be necessary to make animal inoculation tests instead of relying on complement fixation alone. Material from lesions on the palate and lips were not suitable for the complement-fixation test in typing.—[*E. Michelsen and K. S. Thiesen: The Suitability of Complement Fixation for Type Differentiation During an Epizootic of Foot-and-Mouth Disease. Nord. Vet.-med., 5, (March, 1953): 221-231.*]—A.G.K.

Effects of Brain Stem Stimulation

Injections of 0.1 ml. of 1.5 to 2.0 per cent NaCl solution directly into the anterior medial region of the hypothalamus of unanesthetized goats produced, after a latency of thirty to ninety seconds, marked polydipsia. Before the injections, the goats refused to drink but after the injections drank 500 to 2,500 ml. of water. In most of the animals the effect could be repeated on renewed injections.

As far as can be judged from the experiments undertaken, injections of isotonic or hypotonic salt solutions have little or no effect. The Hess technique was applied for fixation and guidance of the cannulas. The operations were performed under light ether and local anesthesia.—[*Bengt Andersson: Polydipsia Caused by Intrahypothalamic Injections of Hypertonic NaCl-Solutions. Experientia, 8, (1952): 157.*]—Bengt Andersson.

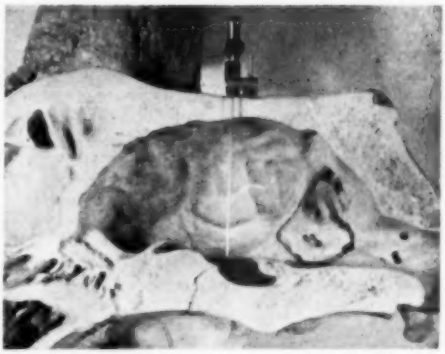

Fig. 1—Paramedian saggital section through the cranium of a goat with cannula fixed on the skull.

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In other experiments with electrodes extending to the brain stem of nonanesthetized sheep, stimuli at some points caused ejection of milk. The effect was the same when epidural injections anesthetized the mammary glands or when half of the udder was denervated. Stimuli at other points caused licking movements, salivation, rumination, defecation, or micturition.—[*Bengt Andersson: The Effect of Localization of Electrical Stimulation of Certain Parts of the Brain Stem in Sheep and Goats. Acta Physiol. Scand., 23, 1951.*]—Bengt Andersson.

Strongyloides Infection in Swine

During 1937 to 1940, the author, operating in Surinam, revealed the presence of *Strongyloides ransomi* in pigs. He found that the time between the infection and the appearance of eggs might be only three days. This suggested that the infection may not always be via the lungs. The author remarks that early in life when the food consists principally of the mother's milk, there is an insufficient hemoglobin synthesis. The small amount of iron and copper in the milk predisposes to physiological anemia. In an infected environment, there is invasion of Strongyloides larvae *per os* or *per cutis* from birth on. The percutaneous invasion may be accompanied by a transitory dermatitis and irritation of the skin. In their passage through the body, the parasites may incidentally cause emboli and thrombi. Furthermore, there is the possibility that the larvae in a mass invasion of the musculature may give rise to myositis. After the invasion comes the status of protection by which the physiological neutropenia fails to develop.

The development of sexually mature females in the anterior part of the small intestine is rapid (prepatent period of three days). In an infection of some importance, they soon give rise to an enteritis accompanied by a reduced appetite, diarrhea, nausea, inflammation, and sometimes hemorrhages. The enteritis damages the already insufficient hemoglobin synthesis in a serious manner

because the body obtains less nourishment, the absorption is impaired, and hemorrhages occur. This creates a condition in which leukocytic reactions are reduced resulting in a vicious circle: reduced resistance, increased parasitic invasion, progressive anemia, etc. In addition to the enteritis, one may observe dullness, a pale skin and mucosa, a dry, wrinkled scaly integument, difficult respiration, increased heart beat, slow growth, and a sudden mortality accompanied, or not, by secondary infections. In the cases with a fatal course, the eosinophils disappear and the lymphocytes become reduced.

The worst phenomena and the greatest mortality come in the third and sixth week. As soon as the pigs obtain milk, plus other foods which provide a sufficient intake of iron and copper, there is improvement. If the infected pigs are not too weakened by enteritis and anemia, providing a normal ration may be beneficial. The anemia becomes less conspicuous, the eosinophils return, the lymphocytes increase, and the body weight improves. However, if the pigs have become too weak, mortalities may continue. This may also be the case when thrifty young pigs are exposed to a markedly infective environment.

The supply of hemoglobin-building tissues in adult swine, as a general rule, is greater than the demand of the body, so its synthesis can no longer be affected by a Strongyloides infection. However, under certain conditions, such as pregnancy, nursing, or chronic loss of blood, the hemoglobin synthesis may become active again. The presence of the larvae in the organs is pathogenic, *per se*, but they may remain only temporarily or may perish. The findings of many larvae in the body of swine which have been subject to illness may have been a result of anemia and a reduced power of resistance.—[*J. Frickers: Strongyloides Infection in Swine. Tijdschr. voor Diergeneesk., 78, (April, 1953): 279-303.*]—L.V.E.

Tetany in Cattle

About 1 per cent of the dairy cattle in the Netherlands suffer from tetany every year; 0.14 per cent die. Losses are also caused by a decrease of production in animals which recover. However, 99 per cent of the cattle behave like "physiological units" that is they maintain the "biochemical equilibrium" which protects against tetany. This is mainly due to the capacity of the intestinal tract to absorb the proper food constituents. On the other hand, the kidneys can excrete substances in a selective manner that would disturb the equilibrium in the tissues.

Cattle are shown to be sensitive to stimuli, of external and internal origin, that affect gastrointestinal movement. This may involve intestinal autointoxication (indigestion) even after the intake of food of normal constituents. Hypomagnesemia is often, but not always, a factor in "indigestion." In tetany, a special intestinal autointoxication occurs which is characterized by a sharp hypomagnesemia. Deficiency of magnesium is found to occur in the Netherlands on poor sandy soils. However, absolute deficiency of magnesium in the food such as occurs in Norway is exceptional in the Netherlands. This is shown by direct analysis of the food. In Norway, the syndrome of tetany and paresis was shown to develop after two months of underfeeding. Latent features developed after one month. In the Netherlands, 46 per cent of 621 animals showed tetany after having been on pasture for one week; 73 per cent showed tetany after two weeks at pasture. The time is too short for a real deficiency disease. Thus, deficiency of magnesium may be excluded in the majority of tetany cases in the Netherlands.—[*L. Seekles: On the Problem of Tetany in Cattle. Tijdschr. voor Diergeneesk., 77, (Jan. 1, 1953): 1-23.*]—L.V.E.

Cattle Breeding in Belgian Congo

Owing to the volume of the original text of this publication, the translator confined himself to a mere summarization of the kind of cattle mentioned and observed by the author. These are as follows: (A) exclusive meat production—(1) Matoba breed; (2) W. Dama breed; (3) Dahomey breed; (4) Loegwaret breed; (5) African breed; (6) cattle of Kisantoe; (7) Songa cattle.

B) Combined meat and milk production—(8) Bahema breed; (9) Alner strain; (10) Kivoe race; (11) cattle of Roeanda-Derandi; (12) "sacred cows" with long horns; (13) Jhigara longhorns; (14) Inkoekoe shorthorns.

C) Milk producers—(15) crosses with the East African zebu-type; (16) the black and white dairy cows.—[*A. E. R. Willems: A Condensed Resume Pertaining to Cattle in the Belgian Congo. Vlaams Diergeneesk. Tijdschr., 22, (March, 1953): 49-63.*]—L.V.E.

BOOKS AND REPORTS

Fundamentals of the Histology of Domestic Animals

Whatever the faults and virtues of the translation and revision of the "Fundamentals of Histology" we must be grateful that there is now a textbook on the histology of domestic animals where none existed before in the English language.

In preparation of this textbook for the American veterinary student, the problem was not only one of translation but also of condensation, rearrangement, substitution, and addition of some material. A definite improvement over the original German textbook is apparent.

Approximately the first one-fourth of the book is devoted to the general histology of the cells and tissues. The balance deals with the special histology concerning the various organs and systems of the domesticated animals. It contains an adequate word description of the micromorphology and the microscopic variations of the tissues of domestic animals. Yet is has brevity and clarity of the basic fundamentals of histology and avoids

the oppressive voluminosity that could easily accompany a treatise dealing with a plurality of species of animals.

It is well illustrated with 449 diagrams, drawings, colored plates (43), and a few photomicrographs. The book would definitely be enhanced if more photomicrographs and more colored plates were inserted. A colored plate to show the stages of development of the myeloid elements of the bone marrow would facilitate learning and understanding of hemopoiesis. Many of the illustrations are not accompanied by their degree of magnification, and the beginning student should be made aware of size relationships constantly in his histological pursuit.

At times, the description reads in a choppy manner, as though interrelating sentences have been simply omitted to reduce the mass regardless of the effect to the reader. In some places the information is incomplete. Where completeness and understanding have been sacrificed for brevity, the information is of little value.

A list of general references is found at the end of the book and references to books repeatedly cited are given in abbreviated form in the footnotes. Complete bibliographical information of special references can be found in the annotated list of footnotes. However, research workers and graduate students depend upon books in part for complete annotated bibliographies to lead them to sources and history of special scientific work. Furthermore, this list of references is more accessible if it is placed at the end of each chapter.

Drs. Habel and Bieberstein have made a real contribution to the field of veterinary histology. In the main, the textbook is excellent. In a few areas, more illustrations and enlargement of the subject content, as the chapter on the blood and lymph, would be an important consideration in their next revision. If the translators will seek out the specialists in the various aspects of veterinary histology and have them critically evaluate the subject content and make suggestions in their respective fields, the tenth edition should be a very valuable textbook—[*Fundamentals of the Histology of Domestic Animals. By Alfred Trautmann and Josef Fiebiger. 426 pages. Illustrated. Comstock Publishing Associates, Cornell University Press, Ithaca, N. Y. Price $8.75.*]—F. K. RAMSEY.

Practical Clinical Chemistry

"This book is written mainly for technicians as an aid to the proper use of procedures in clinical chemistry and is intended to satisfy an obvious need for explicitness in detail." This excerpt from the author's preface rather accurately sets the pace for the work in which the routine techniques used in the author's laboratory are set down in detail sufficient to permit a technician with limited training in chemistry to develop satisfactory proficiency. In addition to detailed explanations of procedure, brief stepwise outlines are supplied for quick reference after the procedure has been mastered. These are conveniently reproduced on perforated pages which can be removed from the book for ready reference in the laboratory.

One of the valuable features, especially for those not working with an experienced chemist, is the chapter on general laboratory procedures which outlines such things as the general precautions necessary to protect person and clothing when handling or making reagents, proper collection and preparation of specimens, methods of cleansing and caring for glassware, and preparation of quantitative solutions. Preparation of standard acids and bases is also described. Photometric measurements, including calculations from optical density and construction of standardization curves, are discussed.

Available tests have been rigidly screened to those considered most satisfactory for the author's laboratory, leaving no choice of method to the operator. This rigid selectiveness is not objectionable if one has no strong preferences for methods or is not in a position to choose for himself. Original modifications and simplifications will be found helpful. One might expect, however, to find procedures for determining BUN as well as NPN even though the author prefers the latter test. One might wonder also why directions for bromsulfalein excretion are included and not those for phenolsulfonphthalein excretion, urine bilirubin, or urine urobilinogen. Some procedures, such as the Folin-Wu method for blood sugar, although useful in routine clinical laboratory work, are not sufficiently critical for research purposes and the investigator should not rely on this selection of tests when choosing methods.

It was not intended that basic principles, indications, or interpretations should be stressed; therefore, this type of information must be sought elsewhere. For explicitness of detail both in the general directions and in outline of specific procedures, the book is commendable and could most certainly be of value to one wishing either to set up a clinical chemistry laboratory or improve upon one already in operation.—[*Practical Clinical Chemistry—A Guide for Technicians. Alma Hiller, Ph.D. 279 pages. Charles C. Thomas, Springfield, Ill. 1953. Price $6.50.*]—D. E. JASPER.

Brucella Abortus Ring Test with Vitally Stained Antigen

This monograph describes the preparation and use of Abortus Bang Ring test (ABR) antigen which is vitally stained with tetrazolium salts instead of hematoxylin. Either the chloride or bromide salts of 2,3,5,-triphenyl tetrazolium are used. These colorless salts are transferred into carmine red formazene compounds by reduction in the living cells. The color is concentrated in one pole of the cell. Dead bacteria are not stained. The growth on agar of *Brucella abortus*, strain 19, is removed from the surface by means of a sterile 0.85 per

cent NaCl solution. One gram of the tetrazolium salt is added to 500 ml. of the cell suspension and incubated at 37 C. for three to five hours. The antigen, which is carmine red, may be prepared for final use by further dilution with 1 per cent phenol or it may be heated, centrifuged, and resuspended in 0.5 per cent phenol to a concentration of 4 per cent by volume of bacterial cells.

These ABR antigens are stable for twelve months at 5 C. One milliliter of milk is thoroughly mixed with 0.05 ml. of ABR antigen in a narrow tube and incubated at 37 C. for one hour. A positive reaction is indicated by a carmine red zone at the top of the milk. It appears that ABR antigen prepared with tetrazolium salts is as sensitive as that prepared with hematoxylin. The ABR test on milk may be more sensitive than the usual tests of serum, because a greater quantity of milk is used. No instances of positive serum reaction and negative ABR milk test were noted. Of interest is the proposal that a serum-ring test be used for detecting serum agglutinins. This is done by adding 0.1 ml. of serum to 1 ml. of normal milk containing 0.05 ml. of ABR antigen. After incubation at 37 C. for one hour, the results are similar to that obtained in the tests for milk. The results of using the ABR test on a large number of cattle indicate that it is a valuable aid in the diagnosis and control of brucellosis in cattle.—[*Abortus-Bang Ring Test with Vitally Stained Antigen. By Herluf Bendtsen. 95 pages. Ejnar Munksgaard, Copenhagen, Denmark, 1952. Price not given.*]—A. G. KARLSON.

Drug Encyclopedia and Therapeutic Index

The apparent realization, by previously disinterested or uninformed drug manufacturers, that the potential volume sales to veterinary practitioners is tremendous, has resulted in the appearance of myriads of medicants for use in treating animals. Whereas a few years ago all practitioners had available for ready reference the drug catalogs of the half dozen "old guard" drug manufacturing organizations catering largely, if not solely, to the veterinary profession, he is suddenly faced with the realization that to get the most out of current veterinary literature and meetings he must be somewhat familiar with the products distributed by over 70 organizations. The products of 68 drug manufacturers considered to have veterinary application are listed in this volume. There are some noticeable omissions of drug and biological product manufacturers of only veterinary items. This was done in accordance with the wishes of the aforementioned organizations. The editor infers that, with the proper stimulation, future revisions will probably include all products used in veterinary medicine.

Section one includes a discussion of each product, its description (in composition), action and uses, administration (dosage), and the forms in which the item is available or supplied. Anyone familiar with an item listed will recognize the similarity in the "action and uses" and the manufacturer's claims made in the literature accompanying the item makes the writer wonder if each item is "fairly evaluated" as stated in the foreword. There are times when a manufacturer may let his enthusiasm for a new product govern the suggested action and uses. This writer doubts if a pharmacologist would accept, without question, the entire content found under the heading "action and uses" of each drug.

The second section of the book consists of an alphabetical list of the 68 coöperating manufacturers, a list of those veterinary products distributed or made by each, and the page number on which a discussion in the first section is located.

The last section consists of 11 pages of drugs arranged as a "Therapeutic Index." Typical categories are: acetonemia therapy, anthelmintics, dermatitis therapy.

It is the writer's opinion that the editors are to be commended for undertaking a task such as this. The book is a handy reference which will be a complete and compact substitute for a mass of separate drug catalogs. The counterpart for the physician, *"Modern Drug Encyclopedia and Therapeutic Index,"* has found several acceptance where applicable. It is hoped that a quarterly supplement may eventually become a part of this veterinary publication, as is the situation in the human drug publication. The possible errors which can occur so easily in a publication of this kind demands the most careful type of editing. An error such as is present on page 3, which gives the amount of benzocaine in Americaine ointment as 0.20 per cent instead of 20.0 per cent can conceivably detract from the value of listing a drug. No doubt each revision will be more accurate than the preceding edition.—[*Veterinary Drug Encyclopedia and Therapeutic Index. Edited by H. C. Stephenson and S. G. Mittelstaedt. 141 pages. Drug Publications, Inc., New York, N. Y. Price $5.00; $6.00 abroad.*]—F. J. KINGMA.

Difco Manual

The "Difco Manual," in its ninth edition since 1927, lists the various products available from the Difco Company and discusses the use of each. The manual is much more than this, however. It is an invaluable source of explanatory material regarding the composition of mediums in common use as well as the various mediums devised for special purposes. Most of the explanatory material is from well-documented sources in periodical scientific literature. Many of the products discussed are standard in the various fields of microbiology. The ninth edition comprises 350 pages and has a regular book binding instead of the paper bindings of previous editions. A copy of the manual is almost a necessity in a bacteriological laboratory.—[*Difco Manual. By Difco Laboratories. 9th ed. 350 pages. Difco Laboratories, Detroit, Mich. 1953. Price not given.*]—R. A. PACKER.

THE NEWS

Foreign Veterinary Colleges Evaluated by the AVMA Council on Education

The Council on Education of the American Veterinary Medical Association recommends that veterinary institutions and organizations in the United States and Canada consider all past and current graduates of the following listed foreign veterinary colleges on an equal basis with graduates of approved veterinary colleges in the United States and Canada.

Inclusion of a foreign veterinary college in this list does not constitute official accreditation or approval by the Council on Education of the American Veterinary Medical Association, since its jurisdiction is limited to the United States and Canada.

This list of recognized foreign veterinary colleges is published for advisory purposes only. It is a partial list and will be augmented and revised at such times as additional data are obtained and evaluated by the Committee on Foreign Veterinary Colleges of the Council on Education. Omission of the name of a foreign veterinary college from the list should not be interpreted as disapproval of that college but, in many instances, indicates that the data available on that college is incomplete or insufficient to permit an accurate evaluation.

Publication of the following list was authorized at the meeting of the Council on Education on May 25, 1953. The list supersedes that previously published in the JOURNAL (March, 1953, pp. 241-242).

1) *Australia*
   Veterinary College, University of Sydney.
2) *Austria*
   The Vienna Veterinary College, Vienna (for graduates in 1952 and in years subsequent thereto).
3) *British Isles*
   Members of the Royal College of Veterinary Surgeons* who are graduates of only the following named colleges:
   a) The Royal Veterinary College, London and Streatley.
   b) The Royal (Dick) Veterinary College, Edinburgh.
   c) The Glasgow Veterinary College, Glasgow.
   d) The Veterinary College of the University of Liverpool.
   e) The Royal Veterinary College of Ireland, Dublin.
4) *Denmark*
   Royal Veterinary Agricultural College, Copenhagen.
5) *France*
   a) National Veterinary College of Alfort, Alfort.
   b) National Veterinary College of Lyon, Lyon.
   c) National Veterinary College of Toulouse, Toulouse.
6) *Germany*
   Hannover Veterinary College, Hannover (for graduates in 1950 and in years subsequent thereto).
7) *Netherlands*
   Royal University of Utrecht, Utrecht.
8) *Norway*
   Royal Veterinary College, Oslo.
9) *South Africa*
   University of Pretoria (formerly Transvaal University), Onderstepoort.
10) *Sweden*
    Royal Veterinary College, Stockholm.

The following veterinary colleges had distinguished faculties and maintained high standards prior to 1939. The Council recommends that graduates of the following colleges during and prior to 1939 be accorded the same recognition as graduates of the colleges named above.

1) *Germany*
   a) Freiderick-Wilhelm's University, Berlin.
   b) Hannover Veterinary College, Hannover.
   c) University of Leipzig, Leipzig.
   d) Bavarian Ludwig-Maximilian University, Munich.
   e) Justus Liebig College for Agriculture and Veterinary Medicine, Giessen.
2) *Hungary*
   Hungarian University of Agriculture Sciences, Budapest.

*The Royal College of Veterinary Surgeons is not a college in the sense in which the term is used in North America. It is a licensing agency chartered by the government to which members are admitted only after having graduated from approved veterinary colleges and after having passed veterinary professional examinations.

Veterinary Colleges in Vienna and Sydney Added to Recognized List of Veterinary Schools

The Council on Education of the American Veterinary Medical Association, at its meeting on May 25, 1953, added the name of the Vienna Veterinary College, Vienna, Austria, to the list of recognized foreign veterinary colleges for graduates in 1952 and in years subsequent thereto. At that meeting, the restriction previously imposed on the Veterinary College, University of Sydney, Australia, for graduates

(Continued on p. 152)

News From Washington

The Mexican foot-and-mouth disease eradication campaign (see pp. 50-51, July JOURNAL) has bogged down. ***The U.S.D.A. officials are attempting*** "to provide satisfactory methods of operating a joint Mexican-U.S. program" but a change in officials in Mexico since the last campaign ***has prevented the slaughter of infected and exposed animals. The Mexicans want to vaccinate.*** Mexican farmers are willing to have their animals slaughtered and buried in an effort to eradicate the disease, according to a special release from "Country Gentleman" after a personal inspection of the area by Associate Editor F. J. Keilholz.

The disease has now spread to an area with a radius of about 12 miles, or twice as big as the original quarantine zone. Some infected animals have been slaughtered and buried. Negotiations are being carried on to develop an eradication program that will be effective and satisfactory to Mexican and U.S. officials.

* * *

Thirty-nine states now have laws or regulations requiring garbage to be cooked before it is fed to swine. Similar bills have been introduced in 3 states, were defeated in 8 states, but 3 of the latter have adequate authority without a new law.

The success of the V.E. eradication program will be governed by the effectiveness with which state and federal V.E. regulations are enforced. Arizona, Nebraska, Iowa, and Ohio have already begun to enforce their regulations and other states are moving ahead as fast as possible.

* * *

As of July 4, 1953, a total of 167,968 swine have been liquidated in 39 states. There have been 738 outbreaks up to July 7, 1953; 483 were in garbage-feeding premises, 36 in grain-feeding farms, and 219 in serum plants and stockyards of which the origin, as far as could be traced, were from garbage feeders.

* * *

President Eisenhower signed the doctor draft law. For detailed provisions see p. 151.

* * *

Dr. Melvin A. Casberg is slated to become the first Assistant Secretary of Defense in charge of medical affairs. The new position is provided for in the administrative reorganization of the Department which became effective June 30.

* * *

The AVMA has advised Representative Reed (R., N.Y.) chairman of the Ways and Means Committee, that it supports enactment of H.R. 10. Similar legislation in the last Congress was known as the Reed-Keogh bills and were described in the December, 1951, JOURNAL (p. 464-465). H. R. 10 would defer payment of income tax on funds invested in an annuity until payments are made to the individual after retirement. The AVMA has also requested permission to appear before the Committee when hearings are held on this bill.

H. R. 5452 introduced by Representative McDonough (R., Calif.) ***will also be followed closely, since it would permit annual deductions for income tax purposes up to $2,400 a year for the purchase of annuities or pension benefits.***

President Signs Doctor Draft Law

President Eisenhower signed the doctor draft law on June 29, 1953. This law, identified as Public Law 84, Eighty-Third Congress, is an amendment to the Universal Military Training and Service (Selective Service) Act as amended, and thus continues to provide for the special registration, classification, and induction of physicians, dentists, and veterinarians for two years beginning July 1, 1953.

P. L. 84, also amended the Career Compensation Act of 1949, which amendment continues the $100 a month equalization pay for commissioned physicians and dentists while on active duty, *and for the first time veterinarians are eligible to receive this extra compensation.*

FOUR PERIODS OF OBLIGATED SERVICE UNDER THE LAW

Although the four Priorities* are continued, the obligation of registrants for service has been changed.

1) Maximum service under the doctor draft is twenty-four months and is required of all registrants called to active duty who have had less than nine months prior duty.

2) Those having nine months or more, but less than twelve months, prior active duty when called are required to serve twenty-one months.

3) Those having twelve months or more, but less than fifteen months, when called are required to serve eighteen months.

4) Those having fifteen months or more prior active service when called are required to serve only fifteen months. Registrants formerly in Priority 2 with seventeen months or more prior active service are classified in Priority 4. No registrant with twenty-one months prior active service can be called during the life of the present act except in time of war or national emergency declared by Congress.

Other Changes.—Prior active duty under P. L. 84 is any time served since Sept. 16, 1940, as an *enlisted man or officer* in (1) Army, Navy, Marine Corps, Air Force, Coast Guard, and U. S. Public Health Service; (2) military service with any ally of the United States during World War II; (3) nonmilitary duty prescribed for conscientious objectors.

No credit for active duty is authorized for time spent in (1) ASTP, or similar programs; (2) active service performed for the sole purpose of undergoing a physical examination; and (3) active duty *for training* entered into subsequent to enactment of P. L. 84 (effective date July 1, 1953).

The new law requires release within ninety days of any doctors on active duty *who would not have been called had the new law* (P. L. 84) been in effect; however, an individual affected *must apply for release.*

Aliens are now eligible to serve as commissioned officers under the doctor draft law.

DEFERMENTS

Local Boards, advised by state or local professional advisory committees to Selective Service, may defer doctors for (1) essentiality to the community, (2) extreme personal hardship, (3) certain teaching posts in medical schools, and (4) essential laboratory and clinical research.

Veterinarians obligated only under the doctor draft *are discharged* from their commissions on completion of active duty performed in carrying out doctor draft obligations, retroactive to cover all who have served a year or more since Sept. 9, 1950 (enactment of original doctor draft law). Reservists who would be liable for doctor draft except for their membership in a reserve component *may resign* their commissions upon completion of the period of obligated service. However, permissive resignation is not extended to those who are obligated by law or contract to serve on active military duty or in training in a reserve component.

*Priority 1 doctors are those who either received all or part of their professional education at government expense or received educational deferments in World War II, and who served less than ninety days on active duty. Priority 2 doctors are those similarly educated or deferred, but who served between ninety days and seventeen months—twenty-one months under the old law. Priority 3 are men with no military service. All others make up priority 4. Priorities 1, 2, and 3 will be called before priority 4.

Veterinarians Receive Certification in Veterinary Public Health

Six Air Force veterinary officers and one Army veterinary officer recently received certification from the American Board of Veterinary Public Health, the first veterinarians to receive this certification.

They are Lt. Col. William B. Snodgrass, command veterinarian for Strategic Air Command; Lt. Col. Robert L. Hummer, director, veterinary service for Gunter Branch, School of Aviation Medicine; Lt. Col. Neil G. MacEachern, command veterinarian for Air Materiel Command; Lt. Col. J. B. Couch, chief, Administrative Division, Veterinary Services, Office of the Surgeon General, headquarters, U.S.A.F.; Lt. Col. Jack H. Hempy, chief, professional division, Veterinary Services, Office of the Surgeon General, headquarters, U.S.A.F.; Lt. Col. William D. Nettles, command veterinarian for the Eighteenth Air Force; and Major William S. Gochenour, Jr., Veterinary Division, Walter Reed Medical Center.

Memberships obtained are the result of a comprehensive competitive examination covering all the aspects of veterinary public health and in the recognition of competency and contribution to this particular field.

(Continued from p. 149)

in 1950 and in years subsequent thereto was rescinded. The Council on Education now recommends that graduates in all years from Sydney be accorded the same privileges as those extended to graduates of Council-inspected and -approved veterinary colleges in the United States and Canada. The Veterinary College at the University of Sydney was established in 1910.

This action of the Council on Education does not constitute official accreditation or approval of these two colleges by the Council, since its jurisdiction is limited to veterinary colleges in the United States and Canada. This recognition is granted to advise and assist veterinary institutions and organizations in the United States and Canada.

Competition for 1954-1955 Fulbright Awards Announced

The Committee on International Exchange of Persons of the Conference Board of Associated Research Council has announced competition for 1954-1955 Fulbright Awards for university lecturing and postdoctoral research in Europe, the Near East, Japan, and Pakistan. These awards are financed by the United States Government under Public Law 584 of the Seventy-Ninth Congress, and are under the auspices of the Department of State and Board of Foreign Scholarships.

Application forms and additional information are obtainable from the Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C. Applications must be postmarked no later than Oct. 15, 1953.

STUDENT CHAPTER ACTIVITIES

Georgia Chapter.—The University of Georgia Student Chapter of the AVMA completed its activities for the last half of the 1952-1953 school year with a "dean's night" and elections on May 25. The new officers of the Chapter are: Lem Staton, president-elect; Bill Clark, vice-president; Steve Hite, treasurer; Ed Brown, corresponding secretary; Earl Staton, recording secretary; and Drs. A. M. Mills and D. E. Cooperrider, faculty advisors.

Other Chapter activities for the semester included a discussion of leptospirosis by **Dr. Martha K. Ward** at the February 9 meeting; On March 9, **Drs. Frank E. Kitchens, C. W. Thornton,** La Grange, and **E. R. Griner,** Atlanta, participated in a small animal panel discussion. **Dr. E. J. Sunkeys,** of the Georgia Department of Public Health, spoke on rabies at the April 19 meeting. The May 11 program consisted of a large animal forum with **Drs. O. M. Bateman,** Sandersville, **R. L. Lott,** Winder, and **P. J. Lindsey,** Willacoochie, all practitioners, participating.

The picnic for seniors, held on May 16 at Crow's Hollow, was well attended.

S/WILLIAM J. BENTON, *Secretary.*

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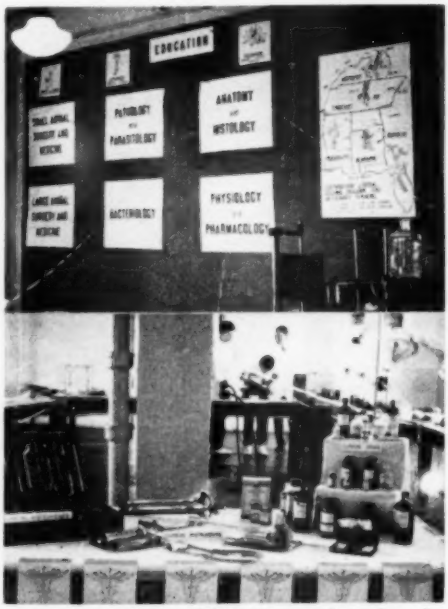
Alabama Chapter.—Recently the Alabama Polytechnic Institute Student Chapter of the AVMA was awarded the trophy for the best



Two sections of the exhibit that won first place for the A.P.I. Student Chapter in the Village Fair at Auburn.

exhibit in the "Village Fair," an annual open house held in the spring to show Auburn at work. It is composed of an exhibit from each of the schools which make up A.P.I.

The exhibit of the School of Veterinary Medicine, which attracted many visitors, was built around three themes: (1) the necessity of the profession for maintaining the prosperity and health of the nation; (2) the educational organization of the veterinary school and preparation of the student to meet the challenge of his profession; and (3) professional opportunities in the field of veterinary medicine.

S/LEON H. SELLERS, JR., *Student Chairman.*

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California Chapter.—A resumé of the activities of the University of California Student Chapter of the AVMA for the spring of 1953 follows. Officers who served during this time were: Ben Lundberg, president; Larry Proctor, president-elect; Sterling Rood, vice-president;

Ben Dillon, secretary; and Charles Webster, treasurer.

On January 25, details were worked out for participation in the midwinter conference of the California Veterinary Medical Association which was held at the College on January 26-28. Students acted as guides and aided in registration of visiting practitioners. **Dr. C. H. Ozanian** of Bellflower, speaker for the evening, told of a typical day in the Los Angeles milk-shed and of several interesting cases he had encountered.

On February 19, **Dr. J. M. Arburua**, San Francisco, gave an interesting talk on the ethics of the veterinary profession. It was announced during the business meeting that a weekly newsletter would be published by the Chapter, and that Dr. Jack Howarth had been chosen as faculty representative for the next two semesters. At the March 12 meeting, **Dr. K. G. McKay** spoke on some of his interesting experiences with the extension service. It was announced that the veterinary school would participate in the Red Cross blood bank drive.

Three members of the first graduating class, 1952, **Drs. Wyland Cripe**, Elk Grove, **Don Hudson**, Sacramento, and **Roy Cobble**, Vacaville, spoke on problems encountered by the recent graduate and related some of their experiences. On May 14, **Dr. C. N. Bramer**, of Los Altos, discussed some aspects of the American Animal Hospital Association and various phases of private practice. It was announced at this meeting that the Chapter float won second place in the Cal Aggie Picnic Day Parade.

The following officers were elected on June 4 for the fall semester of 1953: Larry Proctor, president; Bob Brewer, president-elect; Gene Tobias, vice-president; Joe Held, treasurer; and Bill Bayliss, secretary. President Lundberg introduced Wing Chin, the recipient of the Associated Serum Producers Essay award and president of the class of 1953.

Attendance by Class for Chapter Meetings

Date	Senior	Junior	Soph.	Fresh.	Total
Jan. 25	27	16	9	3	55
Feb. 19	45	29	34	21	129
March 12	22	31	14	21	88
April 19	33	41	26	37	137
May 14	35	27	19	24	105
June 4	38	26	14	12	80

Additional meetings were held on the fourth Thursday of each month at which motion pictures on veterinary subjects were shown and occasionally speakers were present to discuss subjects covered by the pictures.

The social activities included the annual spring formal, May 9, a steak fry on May 23, and coffee and spudnuts served in the Chapter coffee room after each meeting.

s/BEN DILLON, *Secretary.*

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Kansas State Chapter.—The annual dinner for the graduating seniors of the School of Veterinary Medicine was given by the Kansas State Student Chapter of the AVMA on April 18. **Melvin L. Worthington,** junior class, presided as toastmaster, and **Lloyd E. Osborn,** junior class and president of the Student Chapter, gave a short address.

Dean E. E. Leasure presented, to each senior, the AVMA certificate attesting to membership in the Student Chapter of the AVMA, and also presented the following prizes and certificates: the Kansas Veterinary Medical Association awards for general proficiency in the professional curriculum—Jack T. Smith, first, $15; John H. Hurlburt, second, $10; Kansas V.M.A. Award and certificate to the outstanding seniors in the advanced veterinary ROTC—Donald E. Awe, first, Leighton E. Fairbairn, second; AVMA Women's Auxiliary award to the senior making the most outstanding contribution to the veterinary school, other than scholarship, Glen E. Hurley.

Dean Leasure also announced the winner of the Moss Essay on Ethics, presented by the American Animal Hospital Association. Charles F. McCannon won the second prize nationally and the Kansas State prize, amounting to $40 and a certificate. Graduating seniors elected to honorary societies during the school year were announced.

The Student Chapter spring dance was held following the dinner.

s/ROBERT H. FEATHERSTON, *Secretary.*

WOMEN'S AUXILIARY

North Dakota Auxiliary.—The Women's Auxiliary to the North Dakota Veterinary Medical Association met at the Clarence Parker Hotel in Minot on June 14-16, 1953. The following officers were elected for the ensuing year: Mrs. H. W. Kinne, Jamestown, president; Mrs. L. E. Witt, Sidney, Mont., vice-president; and Mrs. D. A. Wire, Valley City, secretary-treasurer.

s/MRS. D. A. WIRE, *Secretary.*

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members

of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

COOLEY, BERNARD M.
210 W. 20th, Collinsville, Okla.
D.V.M., Texas A. & M. College, 1948.

CRESSWELL, WILLIAM H.
Box 652, Aylmer, Ont., Canada.
D.V.M., Ontario Veterinary College, 1948.

GALLAGHER, WILLIAM J.
144 S. Kossuth St., Baltimore 29, Md.
D.V.M., Chicago Veterinary College, 1920.

HARRIS, TOM D., JR.
2600 S. El Camino Real, San Mateo, Calif.
D.V.M., Texas A. & M. College, 1941.

INGS, ALBERT E.
P. O. Box 128, Souris, P.E.I., Canada.
D.V.M., Ontario Veterinary College, 1952.

KERNS, ROBERT L.
Highland Park Animal Hospital, 1460 Skokie Rd., Highland Park, Ill.
D.V.M., Colorado A. & M. College, 1942.

MCHALE, MARK A.
439 Handley Ave., Winchester, Va.
D.V.M., Ohio State University, 1945.

MAHER, MARTIN P.
Vesta, Minn.
B.V.Sc., Ontario Veterinary College, 1935.

MATTHEWS, LOUIS J.
Kent County Health Unit, County Bldg., Chatham, Ont., Canada.
D.V.M., Ontario Veterinary College, 1950.

PAINTER, F. M.
Ross Street, Danville, Ohio.
D.V.M., Ohio State University, 1913.

TABBERSON, KENNETH M.
Cokato, Minn.
D.V.M., Iowa State College, 1949.

WEBER, ALVIN F.
2417 Chilcombe, St. Paul 8, Minn.
D.V.M., Iowa State College, 1944.

Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

Second Listing

CHOW, TSU-LING, Department of Veterinary Science, University of Wisconsin.

ROSSER, BILL W., 1818 A. Patton Dr., Ft. George Meade, Md.

SCOTT, ROBERT E., Campos Eliseos 68, Mexico, D. F., Mexico.

1953 Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

University of California

ABBOTT, ROBERT B., D.V.M.
286 Pleasant St., Concord, N. H.
Vouchers: J. F. Christensen and D. E. Jasper.

BARNIER, JEROME PIERCE, D.V.M.
870 East Baseline St., Hillsboro, Ore.
Vouchers: J. A. Howarth and Donald E. Jasper.

BAYLISS, JAMES W., D.V.M.
Mountcrest Ranch, Hilt, Calif.
Vouchers: J. F. Christensen and J. D. Wheat.

BLACKARD, JOHN SIMPSON, D.V.M.
5624 Huntington Ave., Richmond, Calif.
Vouchers: T. J. Hage and Donald E. Jasper.

BRAZIL, HOLTON LIONEL, D.V.M.
Route 2, Box 44, Visalia, Calif.
Vouchers: J. W. Kendrick and T. J. Hage.

CHAPMAN, JOHN FRANKLIN, D.V.M.
2347-246th Place, Lomita, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

CHIN, WING QUONG, D.V.M.
230 Victoria Rd., Burlingame, Calif.
Vouchers: J. F. Christensen and D. E. Jasper.

CLUTE, HENRY GEORGE, D.V.M.
9127 E. Ralph St., Rosemead, Calif.
Vouchers: B. McGowan, Jr., and D. E. Jasper.

CONDON, THOMAS BYRREL, D.V.M.
413 Willow Street, San Jose, Calif.
Vouchers: J. F. Christensen and J. W. Kendrick.

CORFF, MARVIN M., D.V.M.
Davis Animal Hosp., McMinnville, Ore.
Vouchers: T. J. Hage and D. E. Jasper.

CORNELIUS, CHARLES EDWARD, D.V.M.
311 N. Santa Anita Ave., Arcadia, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

CUTHBERTSON, ARLYNN A., D.V.M.
5667 North Moroa, Fresno, Calif.
Vouchers: D. G. McKercher and L. M. Julian.

DAVIES, JOHN RANDOLPH, D.V.M.
Box 365, Nevada City, Calif.
Vouchers: T. J. Hage and J. E. Moulton.

DEAN, EVELYN LORETTA, D.V.M.
P. O. Box 111, Sutter, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

EGGERS, OTTO J., JR., D.V.M.
P. O. Box 459, Davis, Calif.
Vouchers: J. F. Christensen and E. A. Rhode.

EISENHOWER, ARTHUR JOHN, D.V.M.
5215 Otis Ave., Tarzana, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

ERWIN, KENNETH E., D.V.M.
2703 C. St., Selma, Calif.
Vouchers: J. F. Christensen and E. A. Rhode.

FOOS, ROBERT YOUNG, D.V.M.
532 J. Street, Davis, Calif.
Vouchers: Geo. A. Linton and D. E. Jasper.

HANSEN, JAY CLAYTON, D.V.M.
3732 Newton Road, Stockton, Calif.
Vouchers: E. A. Rhode and Roland Vetter.

HARRIS, ROBERT EVERETT, D.V.M.
230 Alabama St., Vallejo, Calif.
Vouchers: H. S. Cameron and D. E. Jasper.

HOLLIDAY, TERRELL A., D.V.M.
11718 Olympic Blvd., Los Angeles 64, Calif.
Vouchers: J. A. Howarth and Hugh G. Cameron.

HOSKER, RALPH LEO, D.V.M.
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Vouchers: E. A. Rhode and J. F. Christensen.

JACKSON, ROBERT ARTHUR, D.V.M.
Rte 1, Box 14, Davis, Calif.
Vouchers: J. F. Christensen and D. E. Jasper.

KATHEIN, REUVEN A., D.V.M.
5 Radcliffe Avenue, Highland Park, N. J.
Vouchers: G. A. Linton and D. E. Jasper.

KORTUM, WILLIAM MAX, D.V.M.
Petaluma Veterinary Hospital, Redwood Highway North, Petaluma, Calif.
Vouchers: J. W. Kendrick and D. E. Jasper.

Graduating Class, 1953, School of Veterinary Medicine, University of California

Graduating Class, 1953, Division of Veterinary Medicine, Colorado A. & M. College

LARSON, ROBERT FALLON, D.V.M.
D. 9 Aggie Villa, Davis, Calif.
Vouchers: Blaine McGowan, Jr., and J. W. Kendrick.

LUNDBERG, BENJAMIN VICTOR, D.V.M.
523 East 8th St., Davis, Calif.
Vouchers: D. E. Jasper and H. S. Cameron.

NEUSHUTZ, WALTER K., D.V.M.
115 E. Whittier Blvd., Whittier, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

NEWELL, ARTHUR DEBNEY, D.V.M.
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Vouchers: T. J. Hage and D. E. Jasper.

PETTIT, GHERY DE WITT, D.V.M.
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Vouchers: Roland Vetter and D. E. Jasper.

PFLOCK, JACK PAUL, D.V.M.
Rt 4, Box 95, Visalia, Calif.
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PIMENTEL, WILFRED JOSEPH, D.V.M.
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PRICE, LYLE DAVID, D.V.M.
6950 Reseda Blvd., Reseda, Calif.
Vouchers: T. J. Hage and D. E. Jasper.

ROOD, STERLING E., D.V.M.
1318 Kapiolani Blvd., Honolulu, Hawaii.
Vouchers: B. McGowan, Jr., and J. W. Kendrick.

SILVER, MERTON J., D.V.M.
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SIMPSON, ROYCE V., D.V.M.
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STEERE, JAMES HENRY, D.V.M.
1514 Washington, Oregon City, Ore.
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TANGNEY, ROBERT LAWRENCE, D.V.M.
401-8th Street, Davis, Calif.
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Vouchers: T. J. Hage and D. E. Jasper.

TUCKER, JACK A., D.V.M.
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Vouchers: T. J. Hage and D. E. Jasper.

VAN PELT, DANIEL LEE, D.V.M.
Fort Bragg, Calif.
Vouchers: D. E. Jasper and J. W. Kendrick.

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Colorado A. & M. College

BAGLEY, ROYAL A., D.V.M.
Veterinary Science Dept., Utah State Agricultural College, Logan, Utah.
Vouchers: O. R. Adams and R. Jensen.

BARTON, JAMES R., D.V.M.
LaSalle, Colo.
Vouchers: L. K. Wayt and F. J. Milne.

BELLING, THEODORE H., JR., D.V.M.
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Vouchers: J. F. Farquharson and L. K. Wayt.

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BROWN, GORDON D., D.V.M.
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BROWN, JOHN D., D.V.M.
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Vouchers: J. Farquharson and F. Cross.

BURR, ROGER A., D.V.M.
2030 17th Ave., San Francisco, Calif.
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COPELAND, RICHARD M., D.V.M.
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DIXSON, JAMES L., D.V.M.
144 Market St., Cortez, Colo.
Vouchers: J. Farquharson and F. J. Milne.

DONNELLY, CHARLES E., D.V.M.
Plain, Wis.
Vouchers: L. K. Wayt and F. J. Milne.

ECHEVERRIA, DOM, D.V.M.
Remuda Ranch, Wickenburg, Ariz.
Vouchers: L. K. Wayt and F. B. Kinghorn.

FARROW, WILLIAM F., JR., D.V.M.
c/o Dr. Richard Woods, Center, Colo.
Vouchers: J. Ruwitch and L. A. Griner.

FOSTER, CARL M., D.V.M.
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Address unknown.
Vouchers: L. C. Moss and L. A. Griner.

JONES, ROBERT G., D.V.M.
Richland Center, Wis.
Vouchers: O. R. Adams and F. J. Milne.

KEYSER, RAYMOND C., D.V.M.
Address unknown.
Vouchers: L. K. Wayt and R. H. Jourdan.

KROG, HAROLD G., D.V.M.
Woonsocket, S. Dak.
Vouchers: J. Ruwitch and O. R. Adams.

LAW, STUART E., D.V.M.
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LESLIE, ROBERT C., D.V.M.
P. O. Box 258, Grand Island, Neb.
Vouchers: F. J. Milne and O. R. Adams.

LONG, WILLIAM J., D.V.M.
Clifton, Colo.
Vouchers: O. R. Adams and F. J. Milne.

McMAHAN, GARTH L., D.V.M.
Oxford, Neb.
Vouchers: J. Farquharson and L. K. Wayt.

McMURRAY, JOHN R., Jr., D.V.M.
203 "D" St., Petaluma, Calif.
Vouchers: L. C. Moss and O. R. Adams.

McSPADDEN, MATHEW C., D.V.M.
617 N. Institute, Colorado Springs, Colo.
Vouchers: J. Farquharson and F. Cross.

MOORE, WILMER L., D.V.M.
Box 101, Winslow, Ariz.
Vouchers: L. K. Wayt and R. H. Jourdan.

MORRISON, CLYDE L., D.V.M.
Greybull, Wyo.
Vouchers: L. K. Wayt and O. R. Adams.

MUNN, JAMES F., D.V.M.
186 Vet. Village, Ft. Collins, Colo.
Vouchers: L. C. Moss and O. R. Adams.

MURPHY, THOMAS P., D.V.M.
Hartington, Neb.
Vouchers: L. K. Wayt and F. J. Milne.

OHLUND, ARLEY V., D.V.M.
Box 406, Stanton, Neb.
Vouchers: F. J. Milne and F. B. Kinghorn.

PULS, GEORGE J., D.V.M.
Animal Hospital, Safford, Ariz.
Vouchers: F. B. Kinghorn and J. Ruwitch.

PORTER, ROBERT R., D.V.M.
506 N. Colorado St., Gunnison, Colo.
Vouchers: F. J. Milne and L. K. Wayt.

PURVANCE, GROVER T., D.V.M.
187 E. 7th N., Provo, Utah.
Vouchers: J. Ruwitch and R. D. Frandson.

REITEN, ALTON C., D.V.M.
Valley City, N. Dak.
Vouchers: L. K. Wayt and O. R. Adams.

SEVERIN, GLENN A., D.V.M.
Fort Lupton, Colo.
Vouchers: J. Ruwitch and L. A. Griner.

SMITH, PAUL WM. N., D.V.M.
1301 1st St., Coronado, Calif.
Vouchers: O. R. Adams and L. C. Moss.

SNOW, HERBERT N., D.V.M.
1531 Stanford St., Santa Monica, Calif.
Vouchers: F. J. Milne and L. A. Griner.

SURPLUS, RAY D., D.V.M.
Cedar City, Utah.
Vouchers: F. B. Kinghorn and F. J. Milne.

THACKERAY, ROBERT M., D.V.M.
General Delivery, Jerome, Idaho.
Vouchers: J. Farquharson and F. J. Milne.

TOBISKA, JOE H., D.V.M.
3233 W. Florence Ave., Los Angeles, Calif.
Vouchers: O. R. Adams and R. H. Jourdan.

TOLLEY, RICHARD C., D.V.M.
120 W. Mulberry, Ft. Collins, Colo.
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VERNON, RONALD W., D.V.M.
Box 312, Sedgwick, Colo.
Vouchers: V. A. Miller and F. J. Milne.

University of Georgia*

All of the following applicants, with the exception of those otherwise noted, were vouched for by Drs. A. M. Mills and T. J. Jones.

ARMSTRONG, HUGH W., D.V.M.
Monroe, N. Car.
Vouchers: A. M. Mills and V. B. Robinson.

BARRETT, THEODORE R., JR., D.V.M.
North Tazewell, Va.
Vouchers: A. M. Mills and D. E. Cooperrider.

BEDWELL, L. R., D.V.M.
Independence, Va.
Vouchers: E. F. Causey and T. J. Jones.

BENSON, ALBERT C., Jr., D.V.M.
Grafton Farm, Stafford, Va.
Vouchers: A. M. Mills and D. E. Cooperrider.

CLARK, JOHN J., D.V.M.
198 So. Seneca St., Daytona Beach, Fla.
Vouchers: J. D. Morton and W. M. Strong.

COLLINS, DERON, D.V.M.
Box 77, Macon Ga.

COPELAND, RAYMOND T., D.V.M.
1206 Bothwell St., Greensboro, N. Car.
Vouchers: V. B. Robinson and A. M. Mills.

DOBRY, EDWARD A., D.V.M.
Valley Lee, Md.
Vouchers: A. M. Mills and J. D. Morton.

DOCKERY, KARL K., D.V.M.
Broxton, Ga.
Vouchers: E. W. Causey and W. A. Mackenzie.

DORSEY, NANCY S., D.V.M.
490 Copenhill Ave., N. E., Atlanta, Ga.
Vouchers: R. W. Redding and A. M. Mills.

ELLETT, EDWIN W., D.V.M.
Box 402, Crewe, Va.
Vouchers: A. M. Mills and R. W. Redding.

ELLIOTT, GEORGE A., D.V.M.
Haubrich Veterinary Clinic, Claremont, N. H.
Vouchers: A. M. Mills and P. L. Piercy.

FLETCHER, WILLIAM H., D.V.M.
2481 McDowell St., Augusta, Ga.
Vouchers: A. M. Mills and R. W. Redding.

FLOWERS, THOMAS E., D.V.M.
208 Elm St., Rome, Ga.
Vouchers: A. M. Mills and J. D. Morton.

FORBES, DAVIS C., D.V.M.
2660 Duke St., Alexandria, Va.
Vouchers: R. W. Redding and A. M. Mills.

FULCHER, OPHUS M., D.V.M.
Sparta, N. Car.

GARNER, EDWARD, D.V.M.
Box 486, Eatonton, Ga.

GIBBS, MARCUS C., D.V.M.
Ty Ty, Ga.
Vouchers: A. M. Mills and E. W. Causey.

HARE, WILLIAM C., D.V.M.
R.F.D. #2, Hampstead, Md.
Vouchers: A. M. Mills and J. D. Morton.

HAYES, FRANK A., Jr., D.V.M.
Elon College, N. Car.
Vouchers: H. N. Mead and A. M. Mills.

HELBERG, HERMAN W., Jr., D.V.M.
9804 Warwick Rd., Hilton Village, Va.
Vouchers: A. M. Mills and J. D. Morton.

HENRY, CHARLES W., D.V.M.
6411 Hull St., Richmond, Va.
Vouchers: T. J. Jones and D. E. Cooperrider.

HOLBROOK, HAROLD H., D.V.M.
4618 College Ave., College Park, Md.

HOWZE, LONNIE L., D.V.M.
c/o Dr. J. W. Madill, P. O. Box 528, Dade City, Fla.
Vouchers: W. M. Strong and T. J. Jones.

JONES, FRED, D.V.M.
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Vouchers: E. W. Causey and T. J. Jones.

JUSTICE, WILLIAM H., D.V.M.
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KIMSEY, JOHN A., D.V.M.
Young Harris, Ga.

KLECKNER, ALBERT L., D.V.M.
Department of Veterinary Hygiene, School of Veterinary Medicine, University of Georgia, Athens, Ga.
Vouchers: P. L. Piercy and T. J. Jones.

KRABILL, VERLIN A., D.V.M.
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Vouchers: E. D. Stoddard and W. M. Strong.

LOUDENSLAGER, GEORGE W., Jr., D.V.M.
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Vouchers: A. M. Mills and D. E. Cooperrider.

LUCE, L. RICHARD, D.V.M.
Box 4, Melbourne, Fla.
Vouchers: E. D. Stoddard and E. W. Causey.

McMILLAN, PIERCE H., D.V.M.
Fitzgerald, Ga.

MIDYETTE, NORFLEET W., D.V.M.
Elizabethtown, N. Car.

MOORE, SAMUEL L., D.V.M.
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Vouchers: J. D. Morton and A. M. Mills.

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O'QUINN, JOE B., D.V.M.
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Vouchers: L. K. Taul and W. M. Strong.

PATTON, CHARLES B., D.V.M.
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PEARSON, WALTER G., D.V.M.
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Vouchers: A. M. Mills and D. E. Cooperrider.

POWELL, HARTY S., D.V.M.
1831 N. Broad St., Rome, Ga.
Vouchers: A. M. Mills and V. B. Robinson.

RHODES, IRVIN T., D.V.M.
204 So. Poplar St., Lincolnton, N. Car.
Vouchers: A. M. Mills and R. W. Redding.

RIGLER, ROBERT B., D.V.M.
Clarksville, Md.
Vouchers: J. D. Morton and A. M. Mills.

SETSER, MACK S., D.V.M.
Burnsville, N. Car.
Vouchers: T. J. Jones and E. W. Causey.

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Vouchers: J. D. Morton and Sam S. Kreuz.

SMITH, GEORGE L., D.V.M.
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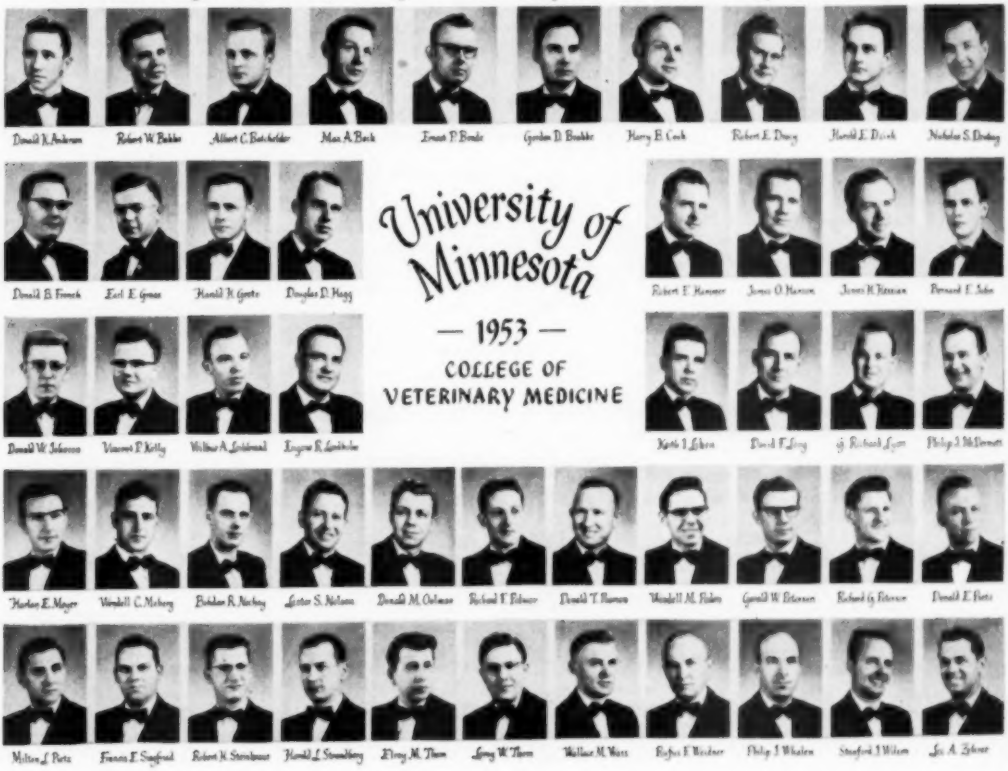

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MCCAHON, JAMES H., D.V.M., 310 Edith St., S. E. Albuquerque, N. M.
MCCANNON, CHARLES F., D.V.M., Bloomington, Ill.
MCCOSS, NELSON D., D.V.M., 606½ Chestnut St., Wamego, Kan.
MERRILL, GEORGE H., D.V.M., 318 N. Sixteenth St., Manhattan, Kan.
MITCHELL, GERALD J., D.V.M., 71 A. Hilltop Cts., Manhattan, Kan.
NELSON, DALLAS L., D.V.M., 739 Dexter St., Clay Center, Kan.
NICHOLSON, DONALD R., D.V.M., Wisconsin Rapids, Wis.
RUSSELL, LEE J., JR., D.V.M., Calhoun City, Miss.
RUSSELL, LYLE V., D.V.M., 414 Freeman Ave., Oakley, Kan.
SAVAGE, JACKIE D., D.V.M., Hominy, Okla.
SCHINDELAM, JOSEPH F., D.V.M., 605 Vine St., Wamego, Kan.
SCHLECTY, WILLIAM R., D.V.M., Alma, Kan.
SCHNELLE, JOHN R., D.V.M., Oakley, Kan.
SCHWINDAMAN, DALE F., D.V.M., 1200½ Broadway, Marysville, Kan.
SIMON, ROBERT D., D.V.M., XIT Ranch, Meade, Kan.
SMITH, CHARLES L., D.V.M., 2237 N. Minneapolis, Wichita, Kan.
SMITH, JACK T., D.V.M., 4227 Holly, Kansas City, Mo.
SMITH, RALPH E., D.V.M., 327 Fairway, Kirkwood, Mo.

STANBERRY, JOHN A., D.V.M., 2680 Myers, Oroville, Calif.
STOCKTON, FORREST H., D.V.M., 32 S. E. 39th St., Oklahoma City, Okla.
STREETER, ROBERT J., D.V.M., 1434 W. Slauson St., Los Angeles, Calif.
STROM, PAUL R., D.V.M., Dwight, Kan.
SWIFT, SETH S., D.V.M., 609 N. 16th St., Manhattan, Kan.
TROUTMAN, RICHARD S., D.V.M., Box 30, Glenwood, Iowa.
WATCHORN, MERLE G., D.V.M., Dodge, Neb.
WATTS, MERLE S., D.V.M., 5302 East 11th, Tulsa, Okla.
WERBIN, MARK H., D.V.M., R.F.D. No. 2, Sedgwick, Kan.
WHITEHAIR, LEO A., D.V.M., R. R. No. 2, Abilene, Kan.
WINDISCH, GEORGE A., D.V.M., 1022 E. Wea, Paola, Kan.
WOLF, NORMAN S., D.V.M., Dept. Animal Care, 303 E. Chicago Ave., Chicago, Ill.

New York State Veterinary College*

BOARDMAN, CRAGER J., D.V.M., R. D. No. 3, Taberg, N. Y.
BOROSON, ELIHU B., D.V.M., 3 Peter Cooper Rd., New York, N. Y.
BUCKLEY, PATRICK C., D.V.M., Brasher Falls, N. Y.
BUELL, WILLIAM C., D.V.M., R. D. No. 2, Ithaca, N. Y.
CHANDLER, ROBERT L., D.V.M., Lander Veterinary Clinic, P. O. Box 381, Turlock, Calif.
CLAUSE, CHARLES F., D.V.M., Bedford, Pa.
CROSHAW, J. ELLIS, JR., D.V.M., New York State Veterinary College, Ithaca, N. Y.
CROWELL, LAURENCE R., D.V.M., 23 Delano St., Pulaski, N. Y.
DANN, LAVERNE S., D.V.M., Lisle, N. Y.
DAVIS, GARRIE R., D.V.M., Inverness Farm Monkton, Md.
DIBITETTO, DANIEL, D.V.M., 130 W. Hickory St., E. Rochester, N. Y.
DRAUDT, RICHARD P., D.V.M., 121 Broadway, Gowanda, N. Y.
EBERSOL, MILTON F., D.V.M., MR#2, Western Ave., c/o Dr. F. L. Davis, Augusta, Maine.
GOLDFINGER, LEWIS A., D.V.M., 55 E. Mosholu Parkway, N., The Bronx, N. Y.
GOODMAN, L. WILLIAM, D.V.M. Hampton Rd., Ithaca, N. Y.
GREINER, ARTHUR E., JR., D.V.M., 7 Chestnut St., Rhinebeck, N. Y.
HALL, CHARLES E., D.V.M., 167 Veterans Place, Ithaca, N. Y.
HARTER, RICHARD W., D.V.M., 39 Capitol St., Auburn, N. Y.
HAYES, GERALD L., D.V.M., R. D. #3, Trumansburg, N. Y.
HOFFMAN, PAUL E., D.V.M., University of Georgia, Veterinary College, Athens, Ga.
HULL, STANLEY H., D.V.M., c/o Dr. Craig Rowan, Weiser, Idaho.
JACOBSON, LOUIS H., D.V.M., c/o Dr. Jack Straley, Bellefonte, Pa.
LEWIS, FREDERICK T., D.V.M., R. D.#4, Dover, Del.
LEWIS, JORDAN, D.V.M., Menomonee Falls, Wis.
LINDBLOM, ARTHUR O., JR., D.V.M., Chaumont, N. Y.
LUNNA, ROBERT P., D.V.M., Newport Center, Vt.
MEAD, WARREN W., JR., D.V.M., 274 Guy Park Ave., Amsterdam, N. Y.
MITCHELL, WILLIAM L., D.V.M., 603 Front St., Binghamton, N. Y.
MOTTA, ARTHUR, D.V.M., 3 Vernon St., New Bedford, Mass.
NELSON, ROBERT C., D.V.M., 11 5th Ave., Saratoga Springs, N. Y.
NEZVESKY, LOUIS O., D.V.M., Newtown Veterinary Hospital, Newtown, Conn.
PLUMBER, GILBERT J., D.V.M., Thurmont, Md.
RAPP, FRANKLIN W., D.V.M., 1218 Baker Ave., Schenectady, N. Y.
ROBBINS, JOSEPH H., D.V.M., 255 Veterans Place, Ithaca, N. Y.
ROWAN, MARY FORD, D.V.M., 531 W. Commercial, Weiser, Idaho.
SANDERSON, CHARLES W., D.V.M., 2235 Elmwood Ave., Buffalo, N. Y.
SCHLOMCHUG, DANNY C., D.V.M., 40-03 12th St., Long Island City 1, N. Y.
SHOR, A. LOUIS, D.V.M., Jeffersonville, N. Y.
SIMPSON, FRANCIS A., D.V.M., Neversink Drive, Port Jervis, R. D. #2, N. Y.
STACK, WILLIAM F., D.V.M., 709 Triphammer Rd., Ithaca, N. Y.
SUMNER, GEORGE W., JR., D.V.M., R. F. D. #1, Brooktondale, N. Y.
THORNE, JOSEPH L., D.V.M., Pleasant Grove, Utah.
TWINING, WILLIAM J., D.V.M., Copenhagen, N. Y.
VINEYARD, GEORGE D., D.V.M., R. D. #2, Bridgeton, N. J.
WILLIAMSON, RUSSELL D., D.V.M., R. D. 4, Lexington, Va.
WINOKUR, ERWIN B., D.V.M., Highland Terrace, Brewster, N. Y.

Oklahoma A. & M. College*

ALBERTY, WARREN L., D.V.M., 1312 W. 3rd Ave., Amarillo, Texas.
ALEXANDER, IVAN D., D.V.M., 1706 W. Arrowhead Pl., Stillwater, Okla.
BROWN, CLIFTON W., D.V.M., Box 56, Bixby, Oklahoma.
BYRD, THOMAS A., D.V.D., 1107 N. Philadelphia, Shawnee, Okla.
CARLIN, LOUIS E., D.V.M., Collinsville, Okla.
CASON, CARL D., JR., D.V.M., Rt. 2, Wagoner, Okla.
CLYMER, DAVID E., D.V.M., Rt. #3, Pauls Valley, Okla.

CONRAD, ROBERT D., D.V.M., Box 993, Veteran's Village, Stillwater, Okla.
DEVINE, JAMES P., JR., D.V.M., 5600 S. E. 15th, Oklahoma City, Okla.
GAMBARDELLA, JOHN M., D.V.M., 206 Cove St., New Haven, Conn.
HESTER, FRANKLIN W., D.V.M., 601 S. Hickory, Chelsea, Okla.
HILL, MORRIS L., D.V.M., Deep Run, N. Car.
HUFFMAN, KENNETH W., D.V.M., 1914 Main St., Keokuk, Iowa.
KIRKBRIDE, CLYDE A., D.V.M., Mountain Grove, Mo.
KIMRAY, LEONARD J., D.V.M., R. R. 3, Roosevelt, Okla.
LYND, FREDERICK T., D.V.M., Box 342, Siloam Springs, Ark.
MORRISON, SAMUEL K., D.V.M., Bentonville, Ark.
OYLER, J. MACK, JR., D.V.M., Grove, Okla.
PAILET, ALVIN, D.V.M., 417 E. Highway, Holdenville, Okla.
PANCIERA, ROGER J., D.V.M., 80 East Avenue, Westerly, R. I.
POTTS, WILLIAM A., D.V.M., 401 West James St., Mount Olive, N. Car.
POUNDS, WILLARD M., D.V.M., 8228 Nelson St., New Orleans, La.
SCHWARTZ, LELAND D., D.V.M., Main St., Garber, Okla.
SWAYZE, RONALD H., D.V.M., 1603 N. Denver, Tulsa, Okla.
VENABLE, JOHN H., D.V.M., 1416 N. W. 44th, Oklahoma City, Okla.
WALKER, JOHN A., D.V.M., 1217 W. Barnes, Alva, Okla.
WILCOX, IVAN R., D.V.M., 417 E. Highway, Holdenville, Okla.
WILLIAMS, ROBERT E., D.V.M., Moline, Kan.
WOESNER, DANIEL A., D.V.M., 1508 Gore Blvd., Lawton, Okla.
YANDA, ANTON V., JR., D.V.M., 935 Elm St., Yukon, Okla.

COMMENCEMENT

A. & M. College of Texas.—At the 1953 commencement exercises of the A. & M. College of Texas, the following candidates were presented for the D.V.M. degree (*see* picture on page 167).

J. E. Allison
D. L. Anderson
W. L. Anderson
B. D. Bell, Jr.
T. L. Benson
N. A. Bryan
P. W. Cadenhead
J. E. Cates
E. W. Crow
L. P. Dalovisio
R. C. Daniels
C. W. Davis
J. P. Davis, Jr.
K. J. Davis
F. R. Fields
Jerry Fineg
D. L. Fitte
C. H. Forthman
J. G. Goodman
Ralph Grogan
T. E. Harding
H. T. Hebert
H. B. Holcomb
T. M. Howard
R. L. Hubert, Jr.
H. E. Jackson, Jr.
H. I. Jenkins
M. U. Johnson, Jr.
F. J. Koenig, Jr.
P. H. Kramer
W. W. Lockridge
R. M. Maddox
J. M. Mathis
H. C. Melius
G. T. Moore, Jr.
R. F. Nauert
D. D. Pate
Eula Phillips, Jr.
M. B. Pigott, Jr.
W. H. Ponder
J. W. Price
H. W. Schmidt
J. L. Seay
C. L. Thaxton
J. A. Ulrich
E. M. Vinas
D. D. White

U. S. GOVERNMENT

Dr. Anderson Named Assistant Chief of BAI.—Dr. Robert J. Anderson has been named assistant chief of the Bureau of Animal Industry, U.S.D.A., to succeed the late Dr. S. O. Fladness. Dr. Anderson was born and educated in Texas and received his D.V.M. at Texas A. & M. College in 1935. He has been with the Bureau since that time except for four years' service in the U. S. Army, in which he attained the rank of lieutenant colonel. He served in Mexico throughout the foot-and-mouth disease eradication campaign and during the last two years was assistant co-director

Dr. Robert J. Anderson

of the Joint Mexico-United States Commission. Prior to his army service, he served with the brucellosis and bovine tuberculosis eradication campaigns. In his new capacity, he will be responsible for all of the Bureau's regulatory activites in disease control and eradication.

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of June 19, 1953.

NEW APPOINTMENTS

Donald L. Anderson, Little Rock, Ark.
Franklin W. Binkley, Indianapolis, Ind.
Franklin W. Bredahl, Des Moines, Iowa.
Leopold Buyvid, Baltimore, Md.
Kent J. Davis, Washington, D. C.
Bob D. Frye, Cheyenne, Wyo.
Ralph W. Grogan, Fort Worth, Texas.
Dirk Hessing, Omaha, Neb.
Hayden I. Jenkins, Albuquerque, N. M.
Leonard J. Kimray, Madison, Wis.
Julius P. Kreier, Philadelphia, Pa.
William W. Lockridge, Albuquerque, N. M.
Rex M. Maddox, Fort Worth, Texas.
Jack H. Russell, Columbus, Ohio.
Albert I. Schmidt, Kansas City, Kan.
James F. Sullivan, Washington, D. C.
Leroy W. Thom, St. Paul, Minn.
Leonard A. Thompson, Olympia, Wash.
Willie L. Trahan, Baton Rouge, La.
Benners B. Vail, Jr., Louisville, Ky.
Ray O. Ward, Jackson, Miss.
Carl F. Wells, Indianapolis, Ind.
Donald L. Williams, Mexico City, Mex.

MILITARY

William J. Welch, Portland, Ore. (furlough).
Keith T. Maddy, Los Angeles, Calif., to San Francisco, Calif. (return from military furlough and transfer).
William R. Strieber, Sioux City, Iowa (separated, military service).

DEATH

Robert I. Lowenberg, South St. Paul, Minn.

RESIGNATIONS

Robert J. Glass, Mexico City, Mex.
Robert B. Grimes, Kansas City, Kan.
Leonard D. Jacobs, Chicago, Ill.
Staton G. Possien, Louisville, Ky.
Clarence S. Renshaw, Los Angeles, Calif.

RETIREMENTS

Fred A. Daudel, Pierre, S. Dak.
Gerard Dikmans, Beltsville, Md.

TRANSFERS

Theodore M. Beard, from Nampa, Idaho, to Denver, Colo.
Oliver E. Flory, from Topeka, Kan., to San Francisco, Calif.
Oswald H. Graham, from Mexico City, Mex., to St. Louis, Mo.
Frank R. Huster, Jr., from Mexico City, Mex., to St. Louis, Mo.
Charles E. Mootz, Jr., from Boston, Mass., to Chicago, Ill.
Robert S. Sharman, from Washington, D. C., to Mexico City, Mex.
George W. Spangler, from Mexico City, Mex., to Topeka, Kan.

AMONG THE STATES AND PROVINCES

California

State Association.—The sixty-fifth annual convention of the California State Veterinary Medical Association was held in Long Beach on June 22-24, 1953. The opening session of the convention and the first paper "Public Relations," by **Dr. W. S. Gochenour**, were broadcast over the long Beach radio station.

Other conference speakers were: **Drs. B. K. Baker**, Santa Ana; **J. E. Baker**, North Hollywood; **T. J. Hage**, University of California, Davis; **J. J. Hird**, Bishop; **B. F. Hoerlein**, Alabama Polytechnic Institute, Auburn; **W. P. Humphrey**, Oxnard; **R. H. Hurt**, Livestock Department, Los Angeles; **A. R. Inman**, Visalia; **D. C. Lindley**, Escondido; **M. B. Lindsey**, Santa Ana; **D. R. Mackey**, Greeley, Colo.; **K. G. McKay**, extension veterinarian, Davis; **T. R. Moore**, North Hollywood; **M. L. Morris**, Hill Packing Company, Topeka; **W. D. Ommert**, Hollydale; **R. W. Ormsbee**, Stockton; **C. H. Ozanian**, Bellflower; **J. E. Peters**, Arcadia; **W. W. Putney**, Van Nuys; **A. H. Quin**, Professional Service Division, Jensen-Salsbery Laboratories, Kansas City, Mo.; **Mr. Emer Reel**, general insurance broker and agent, Los Angeles; **Drs. L. J. Regan** (M.D.), Los Angeles County Medical Association, Los Angeles; **C. H. Reid**, Hollywood; **W. K. Riddell**, Los Angeles; **A. T. Righetti**, Bellflower; **Mr. R. Z. Rollins**, Bureau of Chemistry, California State Department of Agriculture, Sacramento; **Mr. A. Shelhammer**, patrol judge and film patrol analyst, Beverly Hills; **Drs. C. D. Stafford**, Novato; **H. C. Taylor**, Burbank; **L. C. White**, San Bruno; and **W. A. Young**, western regional director, American Humane Association, Hollywood.

S/CHARLES S. TRAVERS, *Executive Secretary.*

Georgia

Public Health Veterinarians.—Public health veterinarians met at Atlanta on June 15, 1953. Among those appearing on the program, and their subjects, were: **Drs. E. S. Tierkel** and **M. P. Hines**—rabies; **J. H. Scruggs, K. S. Young**, and **L. R. Davenport**—psittacosis; **R. Menges**—bovine encephalomyelitis; **K. F. Meyer, E. J. Witte**, and **R. E. Kissling**—health problems; **K. R. Reinhard, Martha K. Ward, L. E. Starr, B. Dean**, and **R. H. Yager**—leptospirosis; **A. K. Kuttler** and **J. H. Steele**—brucellosis; **R. J. Helvig**—poultry sanitation; **C. Cole**—toxoplasmosis in animals and man; **M. P. Hines**—anthrax; **L. Luoto**—Q fever; **L. D. Emik, E. R. Price, F. A. Todd**, and **M. R. Clarkson**—animal morbidity reporting. Dr. R. Fagan served as one of the chairmen.

Illinois

Eastern Association.—The regular summer meeting of the Eastern Illinois Veterinary Medical Association was held June 4, 1953, at Hotel Tilden Hall, Champaign.

Dinner was served to 54 members and guests. The program consisted of a talk by **Mr. Ralph**

Carpenter, Chicago, on "The Organization and Activities of the Interprofessional Council," and two motion pictures, "Livestock Pest Control" and "White Muscle Disease in Calves and Lambs," shown by **Dr. E. E. Kelsey,** El Paso, Ill.

Also, the first annual all-day clinic of the Association was held Thursday, May 21, 1953, at the University of Illinois Veterinary Clinic, Urbana, under the direction of Dr. T. H. Brasmer, of Danville. Over 50 attended this clinic. Of especial interest was the demonstration of a large number of practice car arrangements and cattle chutes.

s/L. R. BAIN, *Secretary.*

Indiana

Indiana-Illinois Association.—The Indiana-Illinois Veterinary Medical Association met in Deming Park, Terre Haute, Ind., on June 12. **Dr. Roy DeMott** of Odon, Ind., gave an excellent discussion of the latest uses of antibiotics in veterinary medicine. **Dr. C. P. Brose,** assistant veterinarian, Indiana, spoke on vesicular exanthema and the testing of cattle; and **Dr. T. K. Jones,** in charge, BAI in Indiana, spoke on the cooperation of veterinarians in testing and reporting infectious diseases of animals.

The following are officers of this Association: Drs. Odell Archer, Terre Haute, president; H. F. Page, Washington, Ind., vice-president; and Roy DeMott, Odon, secretary-treasurer. Dr. M. S. Sheehey, Washington, Ind., is liaison officer of a state committee to improve the cooperation of various state committees.

The women furnished food for an ample fish dinner.

s/J. L. KIXMILLER, *Resident Secretary.*

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Sixth District.—The Sixth District (Ind.) Veterinary Medical Association met in Zionsville on June 3, 1953. The program consisted of a trip through the desiccation, virus research, and pharmaceutical research plants of Pitman-Moore Co., dinner, and a sound film on raising and training Thoroughbreds in the blue grass regions of Kentucky.

s/J. L. KIXMILLER, *Resident Secretary.*

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Wabash Valley Association.—The Wabash Valley Veterinary Medical Association met at Dr. A. F. Ferguson's cottage on Lake Tippecanoe on June 10. This was a social meeting and members enjoyed motor boating, fishing, and visiting.

s/J. L. KIXMILLER, *Resident Secretary.*

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Ninth District.—On June 19, the Ninth District (Ind.) Veterinary Medical Association met at the Country Club in Seymour. Drs. H. Moses and W. Henderson, of the Purdue University faculty, discussed diseases of poultry. This meeting broke all past records for attendance, with 48 present.

Dr. and Mrs. W. A. Brown of Seymour were hosts.

s/J. L. KIXMILLER, *Resident Secretary.*

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Drs. Magrane and Einoris Honored.—At the June 11 meeting of the Michiana Veterinary Medical Association, Drs. H. J. Magrane, Sr. (MCK '13), of Mishawka, Ind., and A. S. Einoris (CVC '20), of Edwardsburg, Mich., were granted life membership in the Association for their long and tireless efforts to better the veterinary profession in their area.

Dr. Frank Booth (right) presents certificates for life membership in the Michiana Veterinary Medical Association to Drs. H. J. Magrane, Sr. (left) and A. S. Einoris.

s/BRUCE HOSTRAWSER, *Secretary.*

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Tenth District.—The Tenth District (Ind.) Veterinary Medical Association met in Union City on June 18, Dr. Moreland, of Cutter Laboratories, presented a motion picture on swine diseases. This subject was then discussed by those present.

s/J. L. KIXMILLER, *Resident Secretary.*

Iowa

Practitioners' Clinic.—The Eastern Iowa Veterinary Practitioners' Clinic attracted approximately 180 veterinarians for the all-day session at Hawkeye Downs in Cedar Rapids. A feature attraction was a demonstration by **Dr. D. W. Rawson** of Milledgeville, Ill., of an electronic metal detector to locate metal foreign bodies in a cow's stomach. A rumenotomy was then performed to relieve the traumatic gastritis.

Kansas

State Association.—The Kansas Veterinary Medical Association held a special business meeting during the fifteenth annual conference for Kansas veterinarians conducted by the School of Veterinary Medicine at Kansas State

College, Manhattan. At this meeting, 18 new members joined the Association.

s/K. M. CURTS, *Resident Secretary.*

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Kansas State Veterinary Conference.—Over 100 veterinarians were in attendance at the conference held at the College of Veterinary Medicine at Manhattan on June 5 and 6, 1953. The guest speakers included **Drs. C. W. Bowers** of Topeka, Kan.; **E. H. Coles** of Colby, Kan.; **J. Fortenberry** of Des Moines, Iowa; **C. E. Hofmann** of Tulsa, Okla.; **Lt. Col. C. B. Johnson** of Fort Riley, Kan.; **C. D. Lee** and **R. A. Packer** of Ames, Iowa; and **W. A. Aitken** of Chicago.

The conference ended with a lively "question box" session late Saturday afternoon.

Kentucky

State Association.—The forty-second annual meeting of the Kentucky Veterinary Medical Association was held at the Seelbach Hotel, Louisville, on July 8-9, 1953.

The following speakers comprised the scientific program: **Drs. L. R. Wempe,** Morganfield; **W. M. Coffee,** LaCenter; **Charles Ogletree,** LaCenter; **F. E. Brutsman,** Traer, Iowa; **Wade Brinker,** Michigan State College, East Lansing; and **L. L. Breeck,** state veterinarian, Frankfort.

s/T. J. STEARNS, *Secretary.*

Maryland

Central Association.—At a recent meeting of the Central Maryland Veterinary Group, the following officers were elected: Drs. Charles H. Kable, Westminster, president; Irwin W. Frock, Reisterstown, vice-president; and Robert P. Wagers, Pikesville, secretary-treasurer.

s/R. P. WAGERS, *Secretary.*

Michigan

State Association.—The seventy-first annual meeting of the Michigan State Veterinary Medical Association was held at the Pantlind Hotel in Grand Rapids on June 30-July 1.

The following speakers appeared on the scientific program: **Drs. Harlan Jensen,** Cleveland, Ohio; **F. E. Eads,** Detroit; **Frank Booth,** Elkhart, Ind.; **F. Kral,** University of Pennsylvania, Philadelphia; **Lynn Palmer,** Kalamazoo; **Clinton Gray,** Norden Laboratories, Lincoln, Neb.; **C. D. Van Houweling,** Chicago, assistant executive secretary of the AVMA; **Ray Hatch,** Department of Veterinary Clinical Medicine, University of Illinois; **R. L. Byram,** Rockford; **F. Aronson,** Three Rivers; **George Stuewer,** Greenville; **Gerard Heyt,** Sparta; **Tevis M. Goldhaft,** Vineland Laboratories, Vineland, N. J.; **George W. Gillie,** former member of the U. S. House of Representatives, Fort Wayne, Ind.; **A. H. Craige,** Pitman-Moore Co., Indianapolis, Ind.; **M. J. Klooster,** Byron Center; **B. C. Hekhuis,** Coopersville; **Peter Buth,** Grandville; and **F. M. Lamoreaux,** Grand Rapids.

s/PAUL V. HOWARD, *General Chairman.*

Minnesota

Southern Society.—On May 27, the Southern Minnesota Veterinary Medical Society met in Austin. **Dr. Alexander Zeissig,** director of veterinary research, Merck and Co., spoke on rabies. Motion pictures on the immobilization of swine by carbon dioxide gas and on disease eradication in swine were shown.

New officers of this Society are Drs. A. B. Magnusson, Blooming Prairie, president; J. M. Higbee, Albert Lea, vice-president; and G. A. Young, Austin, secretary-treasurer.

s/GEORGE A. YOUNG, *Secretary.*

Missouri

Southwest Association.—The Southwest Missouri Veterinary Medical Association met in Neosho on May 15 with 35 in attendance. **Dr. H. W. Howell,** Columbia, spoke on large animal conditions; **Dean A. H. Groth,** University of Missouri School of Veterinary Medicine, discussed ethics; and **Dr. F. H. Oberst,** Kansas State College, spoke on differential titers between strain 19 and the field strain of *Brucella abortus.*

s/A. H. GROTH, *Resident Secretary.*

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Dr. Rosner Appointed State Veterinarian.—Dr. Leonard Rosner (KSC '34), of Jefferson City, has been appointed as state veterinarian of Missouri to succeed Dr. Hugh Curry.

Montana

Dedicate Veterinary Research Laboratory.—On May 23, 1953, the new Montana Veterinary Research Laboratory at Bozeman was dedicated and guests were conducted on a tour of the laboratory building, animal buildings, and corrals. The building is a modern, one-story brick structure with an area of approximately 10,000 square feet. It is designed in two units, the administrative unit and the laboratory unit. All of the laboratories are well equipped with modern instruments provided in part by funds and appropriations sponsored by the Montana Woolgrowers and Stockgrowers Associations. Conveniently grouped around the laboratory are corrals and chutes for sheep and cattle, two infectious disease wards, a newly completed autopsy incinerator building, a cattle nutrition shed, a lambing shed, as well as one for shelter and shearing, and a building where mice, rabbits, and guinea pigs are raised. There are 40 acres of pasture near by.

The function of the laboratory is to investigate the diseases of cattle and sheep which may be of importance to the livestock industry of Montana.

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the New York Academy of Sciences on June 3. A motion picture "Obesity—Problems of Fat Formation and Overweight" was presented.

Dr. Harlan E. Jensen, University Heights, Ohio, presented a paper on "Small Animal Problems with Special Reference to the Eyes," with illustrations. **Dr. S. G. Penny,** Brooklyn, presented a paper on "A Method of Blood Collection," illustrated with his own color film.

s/C. R. SCHROEDER, *Secretary.*

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Veterinary ROTC Awards.—Three veterinary ROTC cadets at the New York State Veterinary College, Cornell University, were among those who received awards at the annual Review of Cadets on May 21, 1953. The review of 4,000 cadets included all ROTC students in the basic and advance courses of the Army, Navy, and Air Force ROTC training units.

The veterinary ROTC cadets who received awards were: Cadet Edward W. Stewart, junior, the Sons of the American Revolution award for displaying outstanding leadership, soldierly bearing, and excellence in classroom work; Cadets Joseph E. Croshaw and Aaron L. Shor, seniors, New York State Veterinary Medical Society Award for outstanding veterinary students enrolled in the ROTC program.

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Dr. Dukes Honored.—Dr. H. H. Dukes (ISC '18), head of the Department of Veterinary Physiology at Cornell University, Ithaca, was honored with the Chicago Alumni Merit Award at the Iowa State College Alumni Day at Ames, Iowa, on June 13.

This award is given annually, to one outstanding alumnus from each college division, for meritorious service in their field and their contributions to their fellowmen.

Dr. Dukes, a native of South Carolina, received his B.S. degree at Clemson College in 1915 before enrolling in veterinary medicine. In 1923, he received his M.S. degree while on the faculty at Iowa State College. He moved to his present position in 1932.

Among other honors, Dr. Dukes is listed in "Who's Who in America" and "American Men of Science."

Also given a similar award were W. A. Wentworth, of the Borden Company of New York, and Allan B. Kline, president of the American Farm Bureau Federation.

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Death of Dr. Orville E. McKim.—Dr. Orville E. McKim, prominent veterinarian of Port Chester, who served with distinction in the Army Veterinary Corps in both world wars, died May 15, 1953, aged 68. Born in Watertown, N.Y., July 25, 1884, he received his veterinary degree from Ontario Veterinary College in 1908.

He was commissioned in the Veterinary Corps in August, 1917, served at Camp Mills and with the A.E.F., and was discharged in August, 1919. He was active in the organized reserves for years and advanced to the rank of major. He was called to active duty early in World War II and again saw service in this country and overseas, holding the rank of colonel at the time of release from active duty.

For many years, he conducted a large small animal practice in Port Chester and was one of the best-known veterinarians in metropolitan New York. He was active in civic affairs, service clubs, and community enterprises, as well as an active supporter of his local, state, and national professional associations. He joined the AVMA in 1913. Interment was in Arlington National Cemetery with full military honors.

North Dakota

State Association.—The forty-eighth annual meeting of the North Dakota Veterinary Medical Association was held in the Clarence Parker Hotel in Minot on June 14-16, 1953.

The following speakers presented papers on the scientific program: **Drs. J. C. Jirikowic,** Bottineau; **L. T. Jessen,** Dannebrog, Neb.; **A. R. Roseberg,** Fargo; **C. D. Van Houweling,** Chicago, assistant executive secretary of the AVMA; **G. T. Edds,** director, pharmacological research, Fort Dodge Laboratories, Fort Dodge, Iowa; **C. B. Bjornson,** Norden Laboratories, Grand Isle, Neb.; **Lee Seghetti,** associate pathologist, Montana State College, Bozeman; **Glenn C. Holm,** North Dakota Agricultural College, Fargo; **J. O. Foss,** Minot; **H. L. Walster** (Ph.D.), dean, School of Agriculture, and director, Agricultural Experiment Station, North Dakota Agricultural College, Fargo; **T. O. Brandenburg,** executive secretary, Livestock Sanitary Board, Bismarck; and **T. R. Myers,** veterinarian in charge, U.S.D.A., BAI, Bismarck.

Members and their wives enjoyed a banquet in the Silver Saddle Room of the Clarence Parker Hotel the evening of June 15.

The following officers were elected at this meeting: Drs. J. T. E. Dinwoodie, Devils Lake, president; H. W. Kinne, Jamestown, vice-president; D. F. Eveleth, Fargo, secretary-treasurer; Frederik Low, Valley City, resident secretary; and D. A. Wire, delegate.

Dr. H. L. Walster, Ph.D., dean of the North Dakota Agricultural College, who retired on July 1 after thirty-four years of service on the faculty of the College, was elected an honorary life member of the Association and was given a filing cabinet, since he is writing a history of agriculture in North Dakota.

s/D. F. EVELETH, *Secretary.*

Ohio

Gamma Chapter of Omega Tau Sigma Recognition Banquet.—At the annual recognition banquet of the Gamma Chapter of Omega Tau Sigma, veterinary fraternity at the Ohio State University, on April 12, the national Gamma

National and Senior Gamma Award Winners for 1953 Standing (left to right)—John L. Anderson, John D. Coltrain, and Ernest G. Ongert. Seated—Dr. A. H. Quin.

Award for 1953 was presented to Dr. A. H. Quin (CVC '20) of Kansas City, Mo., for his outstanding service to the veterinary profession in the fields of public relations and education. Dr. Quin is vice-president and director of the Professional Services Division of Jensen-Salsbery Laboratories, Inc., chairman of the AVMA Committee on Public Relations, and chairman of the Educational Committee of the Associated Serum Producers Association. It is largely through his efforts that the gap between the veterinarian and others concerned with the livestock industry has been bridged.

The Alumni Gamma Award for 1953 was presented to Dr. L. J. Goss (OSU '34) for his outstanding work in the field of zoological medicine. He has been associated with the New York Zoological Park since 1939 and has been assistant director since 1952.

John L. Anderson, John D. Coltrain, and Ernest G. Ongert, seniors in the College of Veterinary Medicine, were honored with Gamma keys for their work as members of Omega Tau Sigma fraternity.

s/EARL WEAVER, *Chairman, Gamma Award Committee.*

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Stark County Association.—The Stark County Veterinary Medical Association met at Schumacher's Restaurant in Canton on May 14 to hear **Drs. M. L. Willen** and **R. C. Gonser,** both of Canton, discuss the meeting of the American Animal Hospital Association in Minneapolis.

Officers of this Association are Drs. M. L. Willen, Canton, president; and Ralph B. Lind, Canton, secretary-treasurer.

s/RALPH B. LIND, *Secretary.*

Ontario

Hog Cholera in Canada.—An outbreak of hog cholera, the first in Canada proper in over six years, occurred recently in southeast Ontario, west and northwest of Guelph. On June 15, approximately 2,500 head of hogs had died or been destroyed in the process of eradicating the disease. About 30 counties were still under quarantine but the disease had been present in only 11 counties.—*Dominion Department of Agriculture.*

Oregon

Death of Lieutenant Colonel Shoemaker.—Lieutenant Colonel John Harvey Shoemaker, retired, passed away suddenly June 1, 1953, in the Dell Rapids, S. Dak., Hospital.

Colonel Shoemaker was born June 3, 1891, at Noblesville, Ind. Upon graduation from Indiana Veterinary College, Indianapolis, he taught school and practiced Veterinary Medicine in Linton, N. Dak.

He was a veteran of World Wars I and II and the Korean conflict, retiring from the Army Oct. 31, 1951. He was inspector in charge for the U. S. Bureau of Animal Industry during the anthrax outbreak in South Dakota in 1938. He was a member of the AVMA and Oregon State Veterinary Medical Association. At the time of his death, he was assistant state veterinarian of Oregon, making his home in Salem.

He is survived by his widow, Retta Golden Shoemaker.

Military Services and burial were in Fort Snelling National Cemetery June 4.

Pennsylvania

Bucks-Montgomery Association.—The Bucks-Montgomery Veterinary Medical Association met at the Moose Home in Doylestown on June 10. **Dr. Eric Pallister,** of the University of Pennsylvania, discussed bovine and equine surgery, with illustrations.

s/V. W. RUTH, *Secretary.*

Texas

Texas A. & M. Veterinary Conference.—About 250 attended the Texas conference for veterinarians at College Station on June 4 and 5, 1953. Although the weather was warm, everyone was comfortable in the fine new Memorial Student Center where all meetings were held and the guests resided.

The guest speakers were **Drs. J. E. Greene** of Auburn, Alabama; **H. Van Roekel** of Am-

herst, Mass.; **R. Leland West** of Waseca, Minn.; **W. A. Aitken** of Chicago; and **J. R. Maxfield**, M.D., of Dallas.

The new veterinary clinic building is nearing completion. It is a one-story building with about 60,000 square feet of floor space and is conveniently arranged.

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Association Officers.—The following officers will serve the State Veterinary Medical Association of Texas for 1953: Drs. J. D. Williams, Colorado City, president; H. H. Greenlee, Fort Worth, president-elect; Raymond Hander, Windthorst, first vice-president; M. N. Bader, Houston, second vice-president; G. D. Stallworth, Austin, third vice-president; Alvin A. Price, College Station, executive secretary-treasurer; J. W. Barton, Temple, past-president.

s/ALVIN A. PRICE, *Executive Secretary.*

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Dr. Boughton to Retire.—Dr. I. B. Boughton (OSU '16) will retire, on Sept. 1, 1953, from his responsibilities as dean of the School of Veterinary Medicine at Texas A. & M. College. Dr. Boughton, who played tackle and later coached football at Ohio State University, has held many responsible positions at the University of Illinois, at Haiti and, since 1932, at the Texas experiment station. He has served as dean at the Texas A. & M. College since 1948, during which time the school has made remarkable progress. He has been a member of the AVMA Council on Education since 1950. Dr. Boughton suffered a stroke about a year ago, from which he has not fully recovered.

Wisconsin

Postgraduate Conference.—The fifth annual Wisconsin postgraduate conference for veterinarians was held at the University of Wisconsin June 8-10, 1953.

The following speakers comprised the guest staff of the conference: **Drs. Rolland Anderson,** Elkhorn; **W. I. B. Beveridge,** professor of animal pathology, University of Cambridge, England; **W. L. Boyd,** St. Paul, Minn., president of the AVMA; **J. W. Carey,** West Liberty, Iowa; **J. B. Collins,** Chippewa Falls, president of the Wisconsin Veterinary Medical Association; **A. A. Erdmann,** assistant chief, Wisconsin Division of Livestock Sanitation, Madison; **S. E. Ferguson,** Lake Geneva; **A. H. Frank,** U. S. BAI, Beltsville, Md.; **F. L. Gentile,** Milwaukee; **Capt. W. G. Hoag,** V.C., U. S. Army, Veterinary Division, Army Medical Service Graduate School, Washington, D. C.; **Dr. M. L. Kaster,** Cuba City; **Col. W. O. Kester,** V.C., U. S. Air Force, assistant for Veterinary Services, office of the Surgeon General, Department of the Air Force, Washington, D. C.; **Drs. W. L. Lea,** director, Industrial Hygiene Division, State Board of Health, Madison; **C. D. Lyle,** Waukesha; **W. E. Lyle,** Deerfield; **C. W. Mather,** University of Minnesota, St. Paul; **H. J. O'Connell,** chief, Wisconsin Division of Livestock Sanitation, Madison; **W. F. Patton,** poultry pathologist, Disease Control Laboratory, Wisconsin Division of Livestock Sanitation, Madison; **B. S. Pomeroy,** University of Minnesota, St. Paul; **E. P. Pope,** director, Disease Control Laboratory, Wisconsin Division of Livestock Sanitation, Madison; **J. E. Rasmussen,** assistant veterinarian in charge, U. S. BAI, Madison; **K. R. Reinhard,** National Microbiological Institute, Rocky Mountain Laboratory, Hamilton, Mont.; **F. W. Schofield,** Ontario Veterinary College, Guelph, Ont.; **R. W. Smith,** Belleville; **W. R. Winner,** veterinarian in charge, U. S. BAI, Madison; **J. W. Wilson,** Dodgeville; and **E. A. Woelffer,** Oconomowoc.

Wyoming

State Association.—The annual meeting of the Wyoming State Veterinary Medical Association was held in Torrington on June 7-8. More than 50 veterinarians from Wyoming, Nebraska, and Colorado attended the meeting. **Dr. G. N. Glover,** retiring president, called the meeting to order and **Dr. G. H. Good** of Wheatland gave the response to the welcome address by **Mr. Kenneth Kluherz,** secretary of the Chamber of Commerce. An interesting observation by Dr. Good was that the Association met in Torrington in 1932 — twenty-one years ago — for its first meeting, so we have now come of age.

The two-day program included papers in different branches of small and large animal fields. **Dr. H. G. Stoenner,** U. S. Public Health Service, Rocky Mountain Laboratory at Hamilton, Mont., presented a paper on leptospirosis. Another outstanding paper was "Urinary Calculi in Livestock — a New Concept in Its Etiology and Possible Prevention with Hyaluronidase," by **Dr. G. O. Puntriano** of the Wyoming State Veterinary Laboratory at Laramie. **Dr. Clyde M. Bemis** from the College of Veterinary Medicine, Pullman, Wash., gave an interesting paper on treatment of fractures and new techniques for large and small animals, and reconstruction of hip ligaments. Other excellent papers were presented by **Drs. H. J. Hill** and **Ora R. Adams** of Colorado A. & M. College; **Charles Davis,** Denver, Colo.; **Harry Kingman,** Cheyenne; **Mark Welsh,** Lederle Laboratories; **Michael Purko;** and **Rodney I. Port,** practitioner from Sundance, who demonstrated spaying of 4 heifers.

Newly elected officers of the Association are Drs. James E. English, Cody, president; Rodney I. Port, Sundance, president-elect; and J. F. Ryff, Laramie, secretary-treasurer.

Colonel Elwood Nye was the principal speaker at the banquet.

s/O. E. BUNNELL, *Resident Secretary.*

FOREIGN NEWS

British West Indies

Trinidad Association.—The Trinidad Branch of the British Caribbean Veterinary Association held its monthly meeting on May 7, 1953.

Dr. H. V. Metevier, M.R.C.V.S., O.B.E. branch president, welcomed **Dr. W. P. Unsworth,** who has recently joined the veterinary branch of the Trinidad Government Service and who had come to the Island recently.

Dr. L. Husdon (OVC '31), who is deputy director of animal husbandry in the Government Service, gave a lecture on hormone therapy in animals. This interesting paper brought many questions from the floor and an instructive discussion followed.

At the previous meeting, **Dr. E. E. Maclachlan** discussed the care and management of Indian water buffaloes. Dr. Maclachlan has practiced on the Island for twenty-five years and has had vast experience with these animals which are kept as beasts of burden for the sugar plantations.

s/S. P. BENNETT, *Foreign Corresponding Secretary.*

India

First Women Veterinarians.—Among the 1953 graduates of the Madras Veterinary College were Kumaris N. Kalyani and P. Sakku Bai, the first women veterinarians of India.

Peru

Animal Investigation Laboratory.—The new Animal Investigation Laboratory of the Ganadera Department, Cerro de Pasco Corporation, has recently been completed and placed in service. It is centrally located, near Oroya, so that specimens may be sent easily from all haciendas in that location.

The building is 60 feet by 28 feet, of cinder block which has been stuccoed, and contains ample facilities and equipment to carry out disease investigation in that area. At the present, the laboratory is engaged in investigations which originated in the temporary laboratory at Pachacayo, *i.e.*, studies of the effect of twice-a-year lambing; value of feeding protein to sheep; effect of feeding cobalt and cobalt copper on sheep; use of combinations of anthelminthic agents in salt; value of hexachloroethane and salt without phenothiazine; and others.—*The Voice of the Veterinarian, LaOroya, Peru, April, 1953.*

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Dr. Figueroa President of Peruvian Association.—A recent letter from Dr. Juan Figueroa I., professor of animal husbandry and secretary of the faculty of veterinary medicine at San Marcos University, Lima, advises of his election as president of the Peruvian Veterinary Medical Association for 1953-1954. Dr. Figueroa extends greetings to colleagues in the States and says that his principal projects as president will include establishment of a good public relations campaign to obtain wider recognition of the veterinary profession in Peru; to extend their cultural and education programs which consist of radio programs, round-table and discussion groups; and to associate their association with the AVMA more closely.

Dr. Figueroa received his degree in veterinary medicine at Ohio State University in 1944 and he later took postgraduate work in animal husbandry at Iowa State College. He served as secretary-general of the First Pan American Veterinary Congress which was held in Lima in October, 1951, the proceedings of which will soon be published.

Other officers of the Peruvian association for 1953-1954 are: Dr. Luis A. Phillips V., vice-president; Dr. Guillernio Schwartzinan, secretary; and Dr. Julio E. Vergara O., treasurer.

Philippine Islands

Annual Meeting of Veterinary Association.—The thirteenth annual convention of the Philippine Veterinary Medical Association was held at the Bureau of Animal Industry in Pandacan, Manila, on April 22-24, 1953.

The following men presented papers during the scientific sessions: **Drs. Angel K. Gomez,** dean, College of Veterinary Medicine, University of the Philippines; **Valente Villegas,** head, Department of Animal Husbandry, College of Agriculture, University of the Philippines; **Felicisimo San Agustin,** research laboratory, BAI; **Eliseo S. Contreras,** Animal Products Division, BAI; **Jose A. Cayabyab,** Division of Animal Husbandry, BAI; **Anacleto B. Coronel,** research laboratory, BAI; **Damaso Fernandez,** Animal Product Division, BAI; **Lt. Oscar San Agustin,** Scout Dog Training Unit, Armed Forces of the Philippines; **Dr. Victorino Zaratan,** Animal Disease Control Division, BAI; **Mr. Martin Floro,** Animal Husbandry Division, BAI; **Mr. Rufino Halili,** president of the National Poultry and Livestock Producers Coöperative Association; **Drs. Amado E. Baladad, Francisco M. Fronda, Rufino B. Gapuz, Mr. Frank Moore, Drs. Gavino San Gabriel, Ramon Acevedo, Deogracias J. Cabrera, Ignacio V. Austria, Daniel S. Bolong, Faustino S. Mensalvas,** and **Mr. Paul A. Gantt.**

Those who attended the convention toured the different livestock feed factories and the Department of Agriculture and Natural Resources Pavilion at the Philippine International Fair.

New officers of the Association are: Drs. Manuel D. Sumulong, president; Pedro S. Sales, vice-president; and Jose A. Solis, secretary-treasurer.

s/JOSE B. ARANEZ,
Foreign Corresponding Secretary.

VETERINARY MILITARY SERVICE

Diplomas Granted in Veterinary Course; Hoskins Medal Awarded.—Nineteen veterinary officers received diplomas at the conclusion of the 1953 course in veterinary medicine at the Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, on June 5.

The graduation exercises were presided over by **Lt. Col. Robert H. Yager,** V.C., chief of the Veterinary Division, Army Medical Service Graduate School. **Dr. William A. Hagan,** dean, New York State Veterinary College, Ithaca, was commencement speaker; **Col. William S. Stone,** M.C., commandant of the Army Medical Graduate School, presented the diplomas; **Col.**

Brigadier General Jacob L. Hartman, V.C., chief, Veterinary Division, Office of the Army Surgeon General, with Greek and Iranian veterinary officers attending the veterinary medicine course, Army Medical Service Graduate School, Walter Reed Army Medical Center, on the occasion of the visit of the class to the Office of the Army Surgeon General.

Left to right—Col. Mir Mofid Fekrat, V.C., Royal Army of Iran; General Hartman; Lt. Col. Demetrios Christoforou, V.C., Greek Royal Army; and Col. Ismail Echghi, V.C., Royal Army of Iran.

Brigadier General James A. McCallam presents the Hoskins Memorial Medal to Capt. Garland R. Farmer.

Members of the veterinary medicine course, Army Medical Service Graduate School, Walter Reed Army Medical Center, line up for their picture on graduation day, June 5.

First row (left to right)—Col. Mir Mofid Fekrat, Capt. Garland R. Farmer, Capt. Billy Rosser, Capt. Rodney S. Billett, Col. Ismail Echghi.

Second row—Major John S. Bixby, Lt. Col. Demetrios Christoforou, Lt. Col. John Nettles, Jr., Lt. Col. James C. McIntyre, Major Robert M. Nims.

Third row—Capt. Daniel W. Hubbard, Major Horace R. Collins, Capt. Robert D. Henthorne, Major William M. Davidson, Major Samuel F. Huber, Major Ralph O. Anslow, Lt. Col. Norbert A. Lasher. Col. B. F. Leach and Major A. F. Allison, also members of the class, are not shown in the picture.

Joseph U. Weaver, M.C., representing **Major Gen. Leonard L. Heaton** and **Brig. Gen. Jacob L. Hartman,** chief of the Veterinary Division, Office of the Army Surgeon General, also addressed the class.

The Hoskins Memorial Medal, given each year by the AVMA to the student officer graduate who attains the highest general scholastic average, was awarded this year to Capt. Garland R. Farmer (COL '45), V.C., by Brig. Gen. James A. McCallam, V.C. (ret.), on behalf of the AVMA.

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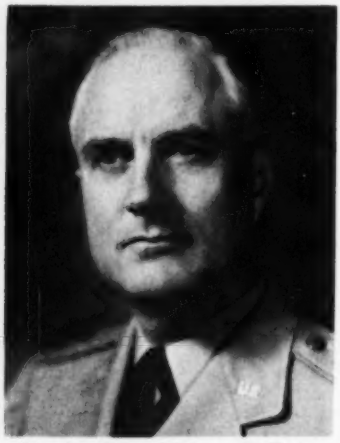
Veterinary Corps Celebrates Anniversary.—The thirty-seventh anniversary of the founding of the Army Veterinary Corps, June 3, 1953, was the occasion for many expressions of congratulation and best wishes to Major General George E. Armstrong, the Army Surgeon General, and Brig. Gen. Jacob L. Hartman, chief of the Veterinary Corps.

Among those paying tribute to the work of the Corps was General Mark Clark, commanding general of the Army Forces in the Far East, who radioed his message from Korea.

• • •

Air Force Veterinary Chief Appointed Brigadier General.—The head of the veterinary service for the Air Force has been appointed temporary brigadier general, according to an announcement from the secretary of the Air Force. General Wayne O. Kester, V. C., U.S.A.F., has directed the veterinary service for the Air Force since its independent establishment in 1949. He has served with the Armed Forces for twenty years.



Brigadier General Wayne O. Kester

General Kester received his D.V.M. degree from Kansas State College in 1931. He entered the service as a second lieutenant in the Army Veterinary Corps in 1933 and was at Pearl Harbor during the Japanese attack of Dec. 7, 1941. He served throughout the war as chief veterinarian, U. S. Forces, in the Pacific Ocean area. Promoted to the grade of colonel in 1943, he was awarded the Legion of Merit and the Commendation Ribbon for meritorious wartime service. General Kester has also been credited with the organization and operation of the Army's first and largest biological warfare defense unit during World War II.

During the appointment ceremonies, Brig. Gen. William H. Powell, Jr., M.C., U.S.A.F., as acting surgeon general for the Air Force, pointed out the important role that the veterinary service plays in the inspection of food and the control of food-borne or animal diseases.

DEATHS

★**Charles W. Hobbs** (WES '01), 88, Manhattan, Kan., died April 27, 1953. Dr. Hobbs was admitted to the AVMA in 1917.

★**Clarence E. Hunt** (ISC '08), 69, Mt. Pleasant, Iowa, died June 13, 1953, after a serious illness. Dr. Hunt had practiced at Mt. Pleasant since 1909. He is survived by his widow; a son, John N. (TEX '47), who will continue their practice; and four grandchildren. Dr. Hunt was a member of the Eastern Iowa Veterinary Association and of the AVMA.

★ **Louis A. Klein** (UP '97), 83, Philadelphia, Pa., died June 22, 1953. An obituary appears on page 143 of this JOURNAL. Dr. Klein was made a life member of the AVMA in 1951.

★ **Orville E. McKim** (OVC '08), 68, Port Chester, N.Y., died May 15, 1953. An obituary appears on page 175 of this JOURNAL. Dr. McKim was a member of the AVMA.

★**Charles E. Schloemer** (UP '07), 71, Jersey City, N. J., died June 6, 1953. Dr. Schloemer had practiced for forty-six years and at one time attended the dogs of President Warren G. Harding in Washington, D. C. He joined the AVMA in 1907. Dr. Schloemer is survived by his widow and three brothers.

★**Walter P. Shoaff** (IND '20), 58, Paris, Ill., died May 30, 1953. Dr. Shoaff had practiced in Paris since 1923. He is survived by his widow, a son, and a daughter.

Dr. Shoaff was admitted to the AVMA in 1920.

★**Lieutenant Colonel John H. Shoemaker** (IND '18), 62, Salem, Ore., died June 1, 1953. An obituary appears on page 176 of this JOURNAL. Colonel Shoemaker was a member of the AVMA.

★**Clark E. Swail, Jr.** (UP '41), 42, Sharon, Pa., died May 7, 1953, of a heart attack. Dr. Swail was a general practitioner. He was admitted to the AVMA in 1941.

★Indicates members of the AVMA.

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Northwest Veterinary Medical Association. Annual meeting. Davenport Hotel, Spokane, Wash., Aug. 10-12, 1953. J. L. Ellis, Olympia, Wash., secretary.

Oregon State Veterinary Medical Association. Summer meeting. Spokane, Wash., Aug. 11-13, in conjunction with the Northwest Veterinary Medical Association. E. L. Holden, Oswego, Ore., secretary.

Northeast Mississippi Veterinary Medical Association Clinic. Dr. W. L. Stroup's Clinic, Corinth, Miss., Sept. 8, 1953. G. A. Knox, Tupelo, Miss., secretary.

Colorado Veterinary Medical Association. Annual meeting. Greeley, Colo., Sept. 10-11, 1953. Paul D. Pattridge, Rt. 1, Box 387-A, Golden, Colo., secretary.

Virginia State Veterinary Medical Association. Semiannual meeting. Cavalier Hotel, Virginia Beach, Va., Sept. 10-12, 1953. A. J. Sipos, 1102 State Office Building, Richmond 19, Va., secretary.

New York State Veterinary Medical Society. Annual meeting. Hotel Syracuse, Syracuse, N. Y., Sept. 14-16, 1953. J. S. Halat, 803 Varick St., Utica, N. Y., acting executive secretary.

Louisiana Veterinary Medical Association. Fall meeting. Hotel Bentley, Alexandria, La., Sept. 16-17, 1953. R. B. Lank, Baton Rouge, La., secretary.

Alabama Annual Conference for Veterinarians. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., Sept. 17-19, 1953. R. S. Sugg, dean.

U. S. Livestock Sanitary Association. Annual meeting. Haddon Hall, Atlantic City, N. J., Sept. 23-25, 1953. R. A. Hendershott, 1 West State St., Trenton 8, N. J., secretary.

West Virginia Veterinary Medical Association. Fall meeting. Daniel Boone Hotel, Charleston, W. Va., Oct. 4-5, 1953. Elvin R. Coon, 98 Capitol Building, Charleston 5, W. Va., secretary.

Purdue University. Annual short course for veterinarians. Purdue University, Lafayette, Ind., Oct. 7-9, 1953. L. M. Hutchings, chairman.

Georgia Coastal Plain Experiment Station. Annual short course for veterinarians. Georgia Coastal Plain Experiment Station, Tifton, Ga., Oct. 12-13, 1953. Peter H. Langer, secretary.

Pennsylvania State Veterinary Medical Association. Annual meeting. Roosevelt Hotel, Pittsburgh, Pa., Oct. 14-16, 1953. R. C. Snyder, Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Eastern Iowa Veterinary Association. Annual Meeting. Hotel Montrose, Cedar Rapids, Iowa, Oct. 15-16, 1953. Wayne W. Thompson, Earlville, Iowa, secretary.

New England Veterinary Medical Association. Annual meeting. Hotel Viking, Newport, R. I., Oct. 18-20, 1953. C. Lawrence Blakely, 180 Longwood Ave., Boston 15, Mass., secretary.

South Dakota Veterinary Medical Association. Annual meeting. Cataract Hotel, Sioux Falls, S. Dak., Oct. 21-22, 1953. R. M. Scott, 2419 S. Main St., Sioux Falls, S. Dak., secretary.

Oregon State Veterinary Medical Association. Fall meeting, Portland, Ore., Oct. 31, 1953. E. L. Holden, Oswego, Ore., secretary.

Southern Veterinary Medical Association. Annual meeting. Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 9-11, 1953. A. A. Husman, Raleigh, N. Car., secretary.

Animal Care Panel. Annual meeting. Billings Hospital, University of Chicago, Chicago, Ill., Dec. 2-3, 1953. The program will be ready for distribution in September and may be obtained by writing to Robert J. Flynn, Secretary, Animal Care Panel, Argonne National Laboratory, P. O. Box 299, Lemont, Ill.

New York State Veterinary College. Annual conference for veterinarians. New York State Veterinary College, Cornell University, Ithaca, N. Y., Jan. 6-8, 1954. W. A. Hagan, dean.

Kansas State Veterinary Medical Association. Annual meeting. Broadview Hotel, Wichita, Kan., Jan. 18-20, 1954, K. Maynard Curts, Kansas City, Kan., secretary.

Texas Veterinary Medical Association. Annual meeting. Hotel Galvez, Galveston, Texas, Jan. 25-26, 1954. Alvin A. Price, College Station, Texas, executive secretary.

Minnesota State Veterinary Medical Society. Annual meeting. St. Paul Hotel, St. Paul, Minn., Jan. 25-27, 1954. B. S. Pomeroy, St. Paul, Minn., secretary.

(Continued on p. 30)

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1200 lbs. feeding rolled oats
150 lbs. soybean oil meal
100 lbs. linseed meal
50 lbs. meat and bone scraps
100 lbs. Vitamineral "A to Z"
15 lbs. salt

2415 lbs.

Approximate Analysis: Protein, 16.0%; fat, 4.3%; fiber, 3.0%.

Weaning to 100 lbs.

1200 lbs. ground shelled corn
900 lbs. ground oats
200 lbs. soybean oil meal
50 lbs. meat and bone scraps
50 lbs. linseed meal
100 lbs. Vitamineral "A to Z"
15 lbs. salt

2515 lbs.

Approximate Analysis: Protein, 14.0%; fat, 3.7%; fiber, 6.5%.

100 lbs. to Market

1525 lbs. ground shelled corn
750 lbs. ground oats
100 lbs. soybean oil meal
25 lbs. meat and bone scraps
50 lbs. Vitamineral "A to Z"
50 lbs. Con-o-mineral Supplement
15 lbs. salt

2515 lbs.

Approximate Analysis: Protein, 11.3%; fat, 3.7%; fiber, 5.6%.

Vitamineral "A to Z" Mineral Supplement with Antibiotics

—saves feed, labor, time, money. Suggest this 3-step **"Creep to Market"** feeding plan. Compare **"A to Z"** low-cost-high-profit results against any present feeding program.

Rations are for pigs on legume pasture. In dry lot, add 200 lbs. 17% dehydrated alfalfa meal. Provide ample water and extra salt, self-choice.

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____100 . . . 13.00	____100 . . . 15.00

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*ADDRESS*_____

*CITY*_____ *STATE*_____

(COMING MEETINGS—*continued from p. 28*)

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. David E. Madsen, 44 South 4th St., San Jose, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. W. E. Smith, 516 Oatman, Sanger, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. Mr. Earl D. Adams, Greensboro, N. Car., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Coastal Bend Veterinary Association (Texas), the second Wednesday of each month. J. E. Hoban, 4301 S. Port Ave., Corpus Christi, Texas, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. J. R. Rosdail, Pomeroy, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month—September through May (except January)—at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Roger W. Grundish, 4217 Mayfield Road, South Euclid 21, Ohio, secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Robert Clemens, 23352 Orchard, Hayward, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville. Fla.

Greater St. Louis Veterinary Medical Association, the first Friday of the month at the York Hotel, Sixth and Market Streets. Luther E. Fredrickson, Room 11, Municipal Courts Bldg., St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month.

(*Continued on p. 32*)

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A NITROFURAN PRODUCT

Wide-Spectrum Antibacterial Agent

Effective in **PUS, BLOOD, MILK and SERUM**

INDICATIONS

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ulcers	retained placenta
fistulas	otitis
gangrene	pink eye
eczema	bovine mastitis

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(COMING MEETINGS—*continued from p. 30*)

Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. E. M. Lang, 716 E. Broadway, Louisville, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. Richard A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Kyowva Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Karl Mayer, 1531 Fourth Ave., Huntington, W. Va., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from September through May, at the Academy of Medicine of Northern New Jersey, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at Hotel LaSalle, South Bend, Ind. Bruce Hostrawser, 2621 Mishawaka Ave., South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

(*Continued on p. 34*)

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References: 1. Am. Vet. 12:17, Jan. 1931; 16:38, Jan. 1935. 2. Vet. Med. 30:480, Nov. 1935.

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(COMING MEETINGS—*continued from p. 32*)

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. C. Edward Taylor, 2146 S. Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy, Mobile, Ala., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 66 Marion Ave., Salinas, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark R3, Del., secretary.

New York City, Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63 St., New York City. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday evening from September through June, at the Casa Mana Restaurant, Cedar Lane, Teaneck, N. J. Robert R. Shomer, 1680 Teaneck Road, N. J., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. W. C. Schilb, 4312 N. W. 23rd St., Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. R. E. Hoadley, Coachella, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. P. H. Hand, Box 1035, Millbrae, Calif., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. G. V. McCranie, Hickory, N. Car., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month,

(*Continued on p. 36*)

Announcing . . . . . **The introduction into the United States of**

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a radically new broad-spectrum chemotherapeutic for use in all domestic animals

Indications — **all diseases caused by streptococci, staphylococci, coli bacteria, paratyphoid organisms and allergic conditions but, particularly, all acute diarrheas. In coli calf scours and septic enteritis of newborn pigs OTRHOMIN should also be used prophylactically. Further special indications are "winter dysentery" in cattle, swine enteritis, swine influenza, pyometra, metritis, vaginitis, retention of placenta (for complete deodorizing, locally, and/or orally and parenterally), mastitis and udder edemas in all animals (*orally or parenterally, not locally*).**

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(COMING MEETINGS—*continued from p. 34*)

in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, time and place specified monthly. C. B. Randall, Kinston, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. F. Ferguson, 1702 S. Dort Highway, Flint, Mich., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. Warren J. Dedrick, 904 S. Lemon, El Cajon, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. A. Majilton, 1093 N. E. 79th St., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

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1. Fincher, S. A. and DeCamp, D., Vet. Med., November 1950. 2. Ibid.

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Assistant veterinarian wanted in dog and cat hospital, New York City. Write giving college and other particulars. Dr. A. Slawson, 2414 Amsterdam Ave., New York 33, N.Y.

(Continued on p. 40)

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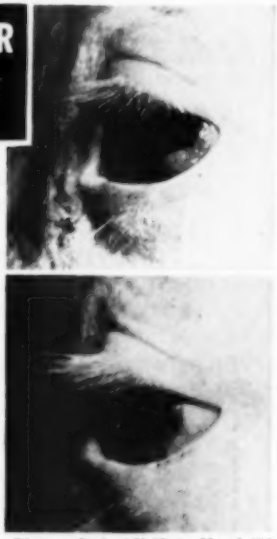
* *Beta Ray Therapy in Ocular Diseases of Animals*, Catcott, et al; Journal A.V.M.A., March, 1953; p. 172-175.



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(CLASSIFIED ADS—*continued from p. 38*)

Assistant wanted for mixed practice in Southwest. Well-established practice; new animal hospital. Good salary and good future. Address "Box K 4," c/o JOURNAL of the AVMA.

Recent graduate wanted to work in small animal hospital in Washington, D.C. Experience not necessary. Good salary with percentages and eventual partnership for right person. Address "Box K 9," c/o JOURNAL of the AVMA.

Veterinarian wanted for mixed practice; 60% small, 40% large animals. Good future for partnership for right man not afraid of work. Position is in central New England. Address "Box K 10," c/o JOURNAL of the AVMA.

Veterinary assistant wanted for predominantly small animal practice in Connecticut, with or without experience. Could lead to permanent arrangement, percentage, partnership, lease, purchase. Address "Box K 23," c/o JOURNAL of the AVMA.

(*Continued on p. 42*)

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Details the advantages of carrot oil vitamins when used in feeds to improve breeding results; to destroy oxidized milk flavors; and to promote general good health and glossy coats. Contains much information. Replete with data and references. Send for it today

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10 lb. drum	1.70 per lb.
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For general hospital feeding, use Hill's Dog Food with the Seal of Approval of A.V.M.A. and A.A.H.A. "Tested and Approved."

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Send information on therapeutic feeding ☐
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(CLASSIFIED ADS—*continued from p. 40*)

Veterinarian wanted as assistant in small animal practice. Good starting salary; could lead to percentage arrangement. Give full particulars. Tennessee license required or ability to qualify for examination. Address Dr. J. L. Wright, 733 E. Parkway South, Memphis 4, Tenn.

Wanted—Positions

Position wanted as associate in busy small animal hospital in Arizona or California. Am 35 years old with 10 years of small animal experience. Will provide references and personal interview. Am in process of selling hospital in Wisconsin. Address "Box K 6," c/o JOURNAL of the AVMA.

Wanted by young, small animal practitioner assistantship leading to partnership, lease, or purchase of small animal practice in Middlewest. Married; veteran; graduated, 1952. Address "Box K 21," c/o JOURNAL of the AVMA.

Graduate veterinarian from approved school, 1944, desires assistantship, partnership, or purchase practice. Serving in Air Force under doctor draft; available Feb. 1, 1954. Experienced in large and small animals. References; married, 31 years old. Licensed in Colorado, Oregon, Nebraska but will locate anywhere. Address "Box K 7," c/o JOURNAL of the AVMA.

Young veterinarian, completing Army service, desires association with large animal practitioner. Prefer Pennsylvania, Ohio, or Indiana. Graduate of accredited school; married; conscientious. Available

(*Continued on p. 44*)

Sold only to Graduate Veterinarians

FUNGASARC

for the effective treatment of skin conditions

Destroys fungi; sarcoptes scabei canis; demodex canis; mites; fleas; lice. Repels ticks. Non Staining; not greasy; has no objectionable odor, destroys odors of external origin. Non Toxic; may be used daily in recommended dilution. Concentrated; one gallon makes four.

Gallon	Quart
$13.95	$4.00
Makes 4 gallons	Makes a gallon

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in treating Splints, Spavins, Curbs, Sidebones, Inflamed Tendons, Bursal Lameness, Etc.

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MANUFACTURED IN 5, 7, AND 8, CAGE UNITS. EQUIPPED WITH BALLBEARING CASTERS AT NO EXTRA COST. MINOR CHANGES IN DESIGN OPTIONAL. SLIDING PANELS BETWEEN CAGES IF DESIRED. STEEL-BARRED DOORS AND ESCAPE-PROOF LATCHES. NEW TYPE DOOR FRAMES WILL NOT COLLECT DIRT. VENTILATING STRIP IN LOWER CAGES. GALVANIZED STEEL USED.

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A lifetime of service and guaranteed by one of California's oldest iron works.

RIVERSIDE IRON WORKS
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(CLASSIFIED ADS—*continued from p. 42*)

in September. Address "Box K 11," c/o JOURNAL of the AVMA.

Young veterinarian, one year of small animal experience, desires assistantship leading to lease, purchase, or partnership in small animal practice in Florida. Veteran, married. Address "Box K 22," c/o JOURNAL of the AVMA.

Wanted—Practices

Want to purchase an established mixed or large animal practice in Pacific Northwest. Will consider lease with option to buy. Am a veteran with a family and a graduate of an accredited school. Have had several years of excellent experience in general practice, and now would like to settle down permanently. Your offer will be seriously considered. Address "Box J 18," c/o JOURNAL of the AVMA.

Mixed practice, predominantly small animal, wanted, to buy or lease in Arizona or Texas, or else to lease in Eastern Ohio or Michigan. Address "Box K 8," c/o JOURNAL of the AVMA.

Wanted to buy or lease active small animal hospital. Prefer California but will consider other locations. Thoroughly experienced and capable. Excellent references. Write full details. Address "Box K 18," c/o JOURNAL of the AVMA.

Experienced practitioner, age 33, wishes to purchase mixed practice, or desires position with possibility of future partnership or purchase. Prefer Minnesota, Wisconsin, or Iowa. Address "Box K 20," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Hospital and two-bedroom home for sale, plus 15 acres of land on U.S. highway 12 near Kalamazoo, Mich. Write Dr. J. L. Davidson, Upjohn Co., Kalamazoo, Mich.

Small animal practice for sale in Chicago, including about $7,000 worth of all new equipment. Capable of grossing in excess of $30,000. Owner expects to be drafted soon; $5,000 down payment will handle. Excellent building, favorable lease; large modern apartment available. Address "Box H 3," c/o JOURNAL of the AVMA.

A golden opportunity for veterinarian who wishes to semi-retire in California. New home with small hospital for sale and a good net with little work. Terms. Address "Box G 20," c/o JOURNAL of the AVMA.

Predominantly large animal practice for sale. Good climate, western North Carolina. Reasonably priced. No real estate involved; office and house available immediately. Address "Box K 24," c/o JOURNAL of the AVMA.

Mixed practice for sale including completely modern small animal hospital; 80% small animals — 20% large. Located in North Carolina; excellent clientele. $20,000 plus drug inventory. Must sell immediately; other interests. Address "Box K 27," c/o JOURNAL of the AVMA.

(*Continued on p. 46*)

Proved Effective Against

Swine Enteritis and Calf Scours

GRANULES OF

VetStrep

(Trade-Mark)

(STREPTOMYCIN SULFATE ORAL VETERINARY, MERCK)

VetStrep, soluble granules of streptomycin, offers the advantages of efficiency, economy, and ease of administration. These granules dissolve readily in drinking water or milk.

VetStrep contains streptomycin, proved effective against both primary and secondary organisms most often responsible for enteritis in hogs, calves, dogs, and quail.

Extensive field trials have demonstrated that VETSTREP often clears up *swine enteritis* and *calf scours* in as little as one day. A summary of these studies is available on request.

VetStrep is packaged in convenient sizes available to veterinarians through their usual sources of supply.

SUPPLIED:
In screw-cap bottles of 15 Gm., 75 Gm., and 750 Gm.

Research and Production for Better Animal Health

MERCK & CO., INC.
Manufacturing Chemists
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Predominantly small animal practice and combined house and hospital for sale in coastal city of Massachusetts. No competition. Price includes real estate, all equipment, including x-ray, excellent piece of property, well-established practice. Yearly gross, $15,000; total price $18,500. Can be financed. Address "Box K 1," c/o JOURNAL of the AVMA.

For sale—one Silver King cattle chute, two-way radio equipment, instruments, and drugs. Complete information on request. Price, $2,000. Address "Box K 3," c/o JOURNAL of the AVMA.

Animal hospital for lease or sale in a Southern town of 5,000. 70% large animal, 30% small animal practice; $600 monthly net income in past year. Address "Box K 5," c/o JOURNAL of the AVMA.

Mixed practice and concrete hospital for sale or lease. Large animal, 75%; small animal can be built up. Established 38 years. Address Dr. D. E. Sisk, Mansfield, Ill.

Southern California small animal hospital now at one-man capacity, for sale or lease with option to buy. No real estate. Low price, lenient terms. Address "Box W 17," c/o JOURNAL of the AVMA.

Lucrative mixed practice for sale in southern California; includes new brick home with small animal clinic. $10,000 down and balance monthly at 6% interest. Total price, $29,500. Address "Box G 22," c/o JOURNAL of the AVMA.

Mixed practice for sale, inventory price, mostly small animals; coastal Carolina. No real estate; long lease on hospital. Reason for selling, other business interests. Address "Box K 28," c/o JOURNAL of the AVMA.

Established mixed practice for sale located in progressive village near Rochester, N. Y. Predominantly a dairy cattle practice with a good share of small animals. Owner selling because of ill health. Address "Box E 30," c/o JOURNAL of the AVMA.

New brick hospital for sale in southern state. Winters mild, practice not strenuous. 70% small animals; big future in dairy work. Net $10,000 first year. Very little early morning and night work. $12,500 to handle, balance $150 per month. Address "Box D 7," c/o JOURNAL of the AVMA.

Mixed practice for sale in suburban area of Connecticut. Established, 80% small animal, 20% large. Completely equipped modern, brick, small animal hospital. $40,000. Address "Box K 13," c/o JOURNAL of the AVMA.

Unusual opportunity, modern, well-equipped small animal hospital for sale. Best reputation for sanitation and humane service in rich, non-drouth, southwestern area of 100,000 population. No comparably equipped competition; beautifully landscaped. Requires $10,000 down payment. Small animal practice alone will return net price of $30,000 in less than three years. Why wait for success? Address "Box K 14," c/o JOURNAL of the AVMA.

Owner will sell all or part of established ranch-type boarding kennel with several beautiful buildings on a small farm. Suitable for veterinary hospital.

(*Continued on p. 48*)

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Sulfacetimide sodium 25%
Fluorescein sol. qs

For treating keratitis (pink-eye) and external infections susceptible to sulfonamide medication.
Fluorescein aids in diagnosis of corneal lesions.

Two convenient packages

3¾ oz *plastic* spray bottle

1 bottle . . *2.00* ½ dozen . . *11.40*

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1 bottle . . *1.00* dozen . . . *11.40*

Select Pharmaceuticals for the Veterinary Profession since 1918

CURTS-FOLSE *laboratories*
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EVSCO

A fungicidal, bacteriacidal, emollient, and anesthetic acting emulsified lotion for treating general skin disorders.

Formula

LANIDERM Contains:

Hexachlorophene (G-11)
Lanolin
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1 pint 1.30
1 gallon 7.80

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Available Thru Your Veterinary Supply Dealer Or Write Direct. Catalog Sent Upon Request.

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NATURALLY, no one who raises dogs can afford the risk of feeding untried dog foods.

KENNEL OWNERS *know* that Friskies--a true-type meal with a 21-year record of success--has *proven* itself on generations of dogs of all sizes and types.

FRISKIES is a combination of 19 separate, high-quality ingredients...chief of which is meat meal and bone meal... all carefully selected and blended into a true-type meal. The 19 ingredients in this famous formula provide variety at *every* meal! And Friskies have a good "meaty" smell and taste dogs love.

TESTED FOR GENERATIONS! Friskies – based on Albers 50 years' experience in animal nutrition –has been checked and tested on dogs of all sizes and types. At the Friskies Kennels on the famous Carnation Milk Farm, generations of healthy, happy dogs have been raised on a diet of Friskies *alone*.

Meal and Cubes in 2, 5, 10, 25 and 50-Lb. Sizes.
ALL TYPES OF FRISKIES CONTAIN CHLOROPHYLLIN

FRISKIES CUBES...in the same famous formula as meal... are crunchy, bite-sized morsels that exercise your dog's teeth and gums. No mixing is required. Nothing to add–not even water!

KEEP YOUR DOG FRISKY WITH

Friskies

ALBERS MILLING COMPANY · A DIVISION OF CARNATION COMPANY

One of a series of informative advertisements

The Problem of Chemical Residues in Milk and Dairy Products

by

WILLIAM A. HADFIELD
Technical Service Department
Pennsylvania Salt
Manufacturing Company

Any chemical residue left on milk utensils or equipment must be considered undesirable if it produces off-flavors or odors in milk, or interferes with starter culture activity for special milks and cheeses. Therefore, it is important for the producers and processors of milk or dairy products to select a sanitizer which will not leave a chemical residue capable of causing the conditions mentioned.

Chlorine solutions made from the sanitizer, B-K® Chlorine-Bearing Powder, are highly effective, yet produce none of the conditions described in the preceding paragraph even when used at concentrations that give a 99.9% kill of representatives of Gram positive and Gram negative groups of bacteria within 30 seconds. These results are obtained using the Johns' Glass Slide Technic and the Weber-Black method.

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Additional information on sanitizing and cleaning—including latest bulletins on C-I-P milk lines and bulk holding tanks—is available without charge from the makers of B-K Chlorine-Bearing Powder. Write to Pennsalt Chemicals, 331 Widener Building, Philadelphia 7, Pennsylvania.

(CLASSIFIED ADS—*continued from p. 46*)

Property located on the second most traveled highway near Indianapolis. Considered the most beautiful and modern kennel in the country; has radiant heat in terrazzo floors, running water, fluorescent lights, knotty-pine walls in offices, and beautiful living quarters. Address "Box K 17," c/o JOURNAL of the AVMA.

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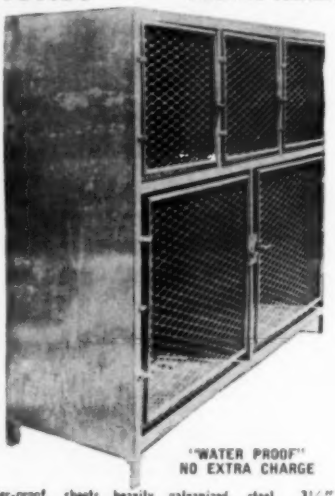
Medical field operating lamps, new, portable, any current, to government specifications. All steel, 100 lb., $40. (we pay shipping). Catalog 25¢. Sailors Surplus, Orangeburg 35, N.Y.

Bovine Prolapse Preventer—Payton Utero-Vaginal Prolapse Preventer. Quickly, easily applied to any size cow. Positive protection. Re-usable, non-irritating, sanitary. Noninterference with placenta release. Excellent for vaginal protrusion; dispensing. See article JOURNAL of the AVMA, December, 1951. Only $3.00; two for $5.00; six for $12.00. Prepaid. Dr. Jerome Payton, Morris, N.Y.

Artificial insemination instruments. Disposable

(*Continued on p. 49*)

5 COMPARTMENT KENNELS
$169.50 IMMEDIATE DELIVERY



"WATER PROOF"
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Water-proof, sheets heavily galvanized, steel. 1½" angle steel welded frames. Doors—9 ga. 1½" steel mesh with steel angle frame. Assembled complete. 5' 6" high. 6 ft. long, 6 in. off ground. Painted—175 in stock. Serving leading Universities.

Compare before you buy and you will agree that our kennel is excellently constructed, more costlier materials used, cheaper in price and you actually save from $25.00 to $75.00 for the same kennel constructed elsewhere. Each compartment has drain gutter, optional but not necessary, no standing water. All floors are flush for easy cleaning. Over 3,000 satisfied customers. Heavy duty casters, $12.50 extra.

Write For Free 16-Page Catalog.

DEE-CHICAGO MFG. CO
Mfrs. of Dog Crates, Equipt. & Supplies Since 1912
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obstetrical sleeves 20¢ each. Package of 20 including detachable chest band—$5, postpaid. Samples and complete catalog on request. Breeders Equipment Co., Flourtown, Pa.

Dog breed books, $3.50 each; Dane, Boxer, Pekingese, Dachs, Springer, Boston, Saint Bernard, $4.00. Keep up on dogs through *Dog World*, monthly, $5, two years; $3, one year. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16, Ill.

Clipper Blade Sharpening

Have your clipper blades sharpened by an expert with 28 years of practical factory training. We know how your blades must be ground to cut like new. Also clipper repairing. All work guaranteed to satisfy you or money back. Now serving veterinary colleges, and over 500 satisfied veterinarians. Why not you? 24-hour service. We ship insured prepaid. Avoid C.O.D. charges; enclose 75¢ for each set with blades. We are headquarters for Sunbeam Stewart labor-saving equipment, Allover, and Oster quality clippers and blades. Write for information on Oster, Stewart, and Allover quality clippers and products. Service Grinding and Supply Co., 903 Chicago St., Racine, Wis.

Wanted—old-type Hausman and Dunn equine emasculators with White's extra crushing attachment. Address "Box K 15," c/o JOURNAL of the AVMA.

Found

AVMA key ring containing National Lock Co. Rockford key 56-E-8, and also suitcase-type key; mailed from Chicago and Council Bluffs train 10. Address, AVMA, 600 S. Michigan Ave., Chicago 5.

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Want to buy small animal hospital with good small and large animal practice in Ohio or Indiana. Living quarters preferred. Down payment of $6,000-$8,000 offered. Give full particulars first letter. Address "Box K 25," c/o JOURNAL of the AVMA.

Mixed practice for sale; gross income $20,000 annually. In central New England city of over 80,000 population. Modern seven-room house and new hospital. Address "Box K 26," c/o JOURNAL of the AVMA.

Choice, modern, small animal hospital for sale. Fully equipped, well-established, lucrative practice in wealthy area southern California. Requires $25,000 down. Address "Box K 29," c/o JOURNAL of the AVMA.

BROKEN TEETH

—repaired in bottom clipper blades. Top and bottom blades sharpened to match. Save money—Guaranteed. Prices on Request

HIGHLY SPECIALIZED SHARPENING

Sales—Repairing on Oster and Stewart clippers.

Sharpened Blades Tested on Rabbit Fur

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Prompt Service—Est. 17 years

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IMPROVED 7-CAGE DE LUXE DRAIN UNIT

The small size is 7½ feet long with 3-30" cages in bottom and the large unit 9 feet long with 3-36" cages in bottom.

Also available in removable tray style, or plain flat floor style without gutter drains in front.

Our units are available in 3, 5, 7 or 12 cage units.

Write for NEW cage booklet; also DRYER FOLDER

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Baltimore Wire & Iron Works

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Our improved dog dryer with entirely transparent doors and larger blower is proving most satisfactory to our numerous users. Many have recommended them to their friends saying "it's doing a wonderful job."

A NEW UTERINE MEDICATION

Particularly for Metritis and other complicating infections of the reproductive tract.

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TABOLES WITH TYROTHRICIN and CHLOROPHYLLIN

Sulfanilamide	33 gr.
Sulfathiazole	5 gr.
Urea	207 gr.
Sodium-Copper chlorophyllin	25 mg.
Tyrothricin	50 mg.

Supplied in: Jars of 25

HAVER-GLOVER LABORATORIES

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SWINE ERYSIPELAS

This Could Be The Year —

The most favorable hog-corn ratio in the past few years for profit — and large numbers of unprotected swine — could lead to many late season outbreaks of swine erysipelas.

Lockhart has available adequate supplies of record-of-performance anti-sera for the control of this disease.

Look to Lockhart for swine erysipelas products with an unparalleled record of performance in the laboratory and in the field.

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800 Woodswether Road **Kansas City, Missouri**

lungworm infection

Jen-Sal

Boviphene-D | Bovine lungworm control

History: A herd of 500 dairy calves, 4 to 6 months old heavily infected with lungworms.

48 head died. Fecal examination revealed many lungworm larvae. Post mortem showed bronchioles almost occluded by lungworms.

Treatment: Boviphene-D therapy (2 Grams phenothiazine per head daily in feed).

Observations: Mortality in herd averaged 1 calf daily when treatment began. After first month 10 deaths; after second month, 4 deaths. One loss during fourth month due to blackleg. No lungworms found in bronchioles.

Herd responded to treatment well. Possibly due to death of embryonated eggs and larvae in the intestine of the new host before it could become adult.

Jensen-Salsbery Laboratories, Inc.
Kansas City, Missouri

nematode infection

Boviphene-D | Nematode control in beef calves

History: 26 Hereford calves, 1 year old, handled under typical range conditions. 4 head showed clinical symptoms of parasitism and heavy concentrations of nematode eggs in feces. All were unthrifty.

Treatment: Individual worming and calves put on Boviphene-D therapy (2 Grams phenothiazine daily) on continuous intake schedule.

Observations: At the end of 90 days, calves showed a low egg count and marked improvement in condition. Nematode count was reduced from 175 eggs to 2 eggs per Gram.